SELLS

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T GROWER

American FRUIT GROWER

MAY · 1948

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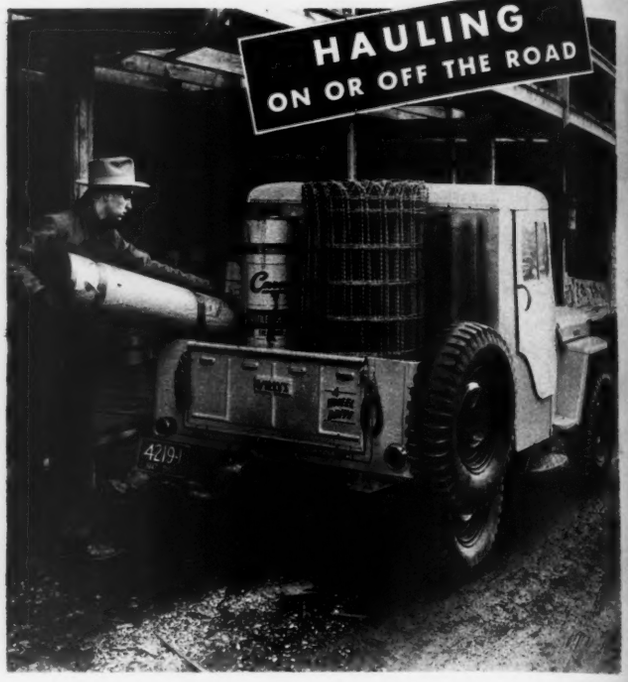
POLLINATION POINTERS

SEE HOW MUCH MORE YOU GET

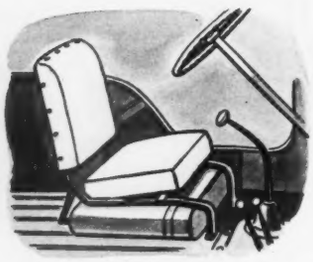
When You Get a Universal 'Jeep'



With the power of its 60-hp "Jeep" Engine and steady-pulling traction of 4-wheel-drive, the Universal "Jeep" operates plows, harrows, discs and other implements at tractor speeds of 2½ to 7 miles per hour. The efficiency of the Universal "Jeep" for tractor work has been proved by use on thousands of farms in every section of the country.

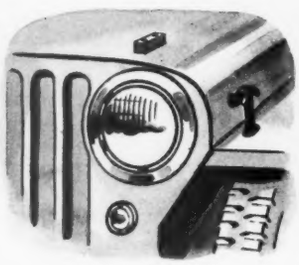
You get more than a tractor when you get a Universal "Jeep". Its selective 2- and 4-wheel drive gives you traction in the field and on bad roads, with normal road speeds for hauling and towing on the highway. With power take-off, the "Jeep" will operate all types of belt and shaft-driven equipment. The "Jeep" does more jobs—the year round.

COMPARE THE UNIVERSAL 'JEEP' FOR COMFORT AND CONVENIENCE FEATURES

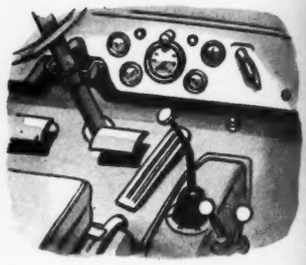


DRIVER'S SEAT of spring and cushion construction, with full back, means more comfort with less fatigue from field work. Fenders give protection from dust and mud.

FOR COLD DAYS, the "Jeep" can be equipped with half or full metal cab, as shown, or with canvas top and curtains, and heater. Tops and heater optional at extra cost.



FOR NIGHT FIELD WORK and highway driving, the "Jeep" has 7-inch sealed-beam headlights—same size used on passenger cars — plus parking and tail light.



EASY TO DRIVE as a car. Full instrument panel, self-starter, conventional pedals and accelerator. Change from 2 to 4 wheel drive is made by shifting lever.

The 4-Wheel-Drive UNIVERSAL 'Jeep'

WILLYS-OVERLAND MOTORS, TOLEDO, OHIO, MAKERS OF AMERICA'S MOST USEFUL VEHICLES

Entered as second class matter at Post Office at Cleveland, Ohio, under the Act of March 3, 1879. Additional entry at Mount Morris, Ill.

Here's how to guard against mites and codling moths too!

PRODUCTS OF SHERWIN-WILLIAMS RESEARCH

Spray your orchards with SHERWIN-WILLIAMS SUPER KILLEX®
(the extra-powerful new miticide)
plus DDTOL* 50% WETTABLE

● Now you can take full advantage of the *proved* effectiveness of DDTOL 50% WETTABLE in preventing codling moth damage—*without* having to worry about mite or aphid infestations!

Just incorporate SUPER KILLEX, *along* with DDTOL 50% WETTABLE, in your spray program!

A new addition to the Sherwin-Williams Agricultural Chemicals line, SUPER KILLEX, a TEPP product, is an extremely powerful miticide that gives outstanding control of the European Red. Schoenii, Pacific and 2-Spotted Mites, Red Spiders and aphids.

SUPER KILLEX is fully compatible with DDTOL 50% WETTABLE and with most other materials used in your summer spray schedule.

Plan *now* to give your fruit this effective safeguard against aphids, mites and codling moths!

® Trademark Reg. U. S. Pat. Off. *Trademark

SHERWIN-WILLIAMS AGRICULTURAL CHEMICALS
COVER THE CROPS THAT COVER THE EARTH

SHERWIN-WILLIAMS

AGRICULTURAL CHEMICALS

Plan Now for Bigger Crops, Better Quality Crops

with PORTABLE SPRINKLER-TYPE IRRIGATION using Time and Labor-Saving

REYNOLDS *aluminum rigid pipe*

PLAN now for rain . . . when you want it, where you want it. Portable sprinkler irrigation is both economical and practical for every kind of crop in all kinds of climates. Better your crop production even in good growing years—end the dangers of loss from drouth. Plan now for benefits like these:

Twice the yield on cannery crops, vegetables and garden truck is the report of most farmers using sprinkler systems. And some crops produce two harvests a year.

Berries and other bush crops also yield as much as 200% more. Quality and yield improve greatly when orchards get this care.

Hay crops increase 100% when sprinkler irrigated. Pastures thrive longer with more stock grazing.

Get REYNOLDS Rigid Pipe for your irrigation system. It's strong. This aluminum alloy is light but long-lasting, won't break or dent with rough handling. Cuts time and labor . . . one man can carry two 20-foot sections readily. It can't rust, resists corrosion. Uniformly round for easy coupling. Smooth walls permit free flow at high pressure. Consult the irrigation equipment dealer who sells REYNOLDS ALUMINUM Rigid Irrigation Pipe in your locality. Get his name from the Reynolds Sales Office listed under "Aluminum" in your classified telephone directory.

***FREE!** Valuable information on portable sprinkler irrigation contained in this illustrated booklet. Request your copy by writing to Reynolds Metals Company, Aluminum Division, 2037 South Third St., Louisville 1, Kentucky.*

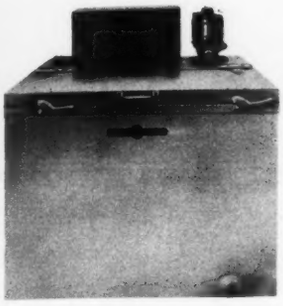
REYNOLDS METALS COMPANY, Aluminum Division, Louisville 1, Ky.

REYNOLDS *Lifetime* ALUMINUM

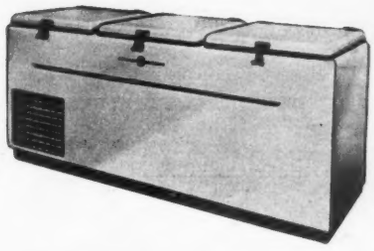
REYNOLDS' PIONEERING MADE ALUMINUM COMPETITIVE . . . TAKE ADVANTAGE OF IT!

Announcing

A NEW LINE OF GE FARM REFRIGERATION EQUIPMENT



MILK COOLER. New G-E Unit provides fast, safe, milk processing. Spray model can cool to 50 degrees F. in about 40 minutes. Agitator model —50-60 minutes.



FARM AND HOME FREEZER. Attractive, heavily built cabinets available in two sizes . . . provide generous freezing and storage capacity. Heavily insulated for added economy.

REACH IN. A farm-sized refrigerator available in forced-air circulation or ice-maker models of 16, 25 or 35 cubic foot capacity.

At last you can again get economical, reliable General Electric refrigeration cabinets at your G-E Dealer.

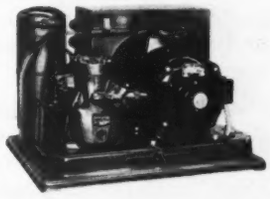
You'll find them attractively styled and ruggedly constructed to stand years of hard use. The sturdy G-E milk coolers, for instance, have an outer tank of long-lasting, rust-resisting, heavy gauge copper bearing steel.

The new G-E Farm Freezer is available in two sizes, both of which provide generous freezing and storage space. The Walk-In Room is sectionally constructed and can be assembled on your farm to fit any space. All G-E cabinets are heavily insulated for the greatest economy and equipped with the new General Electric condensing unit.

General Electric also offers its new line of compact, Type CW Condensing Units. Their efficient design means more cooling per dollar of power cost and a longer life of trouble-free operation.

For expert assistance with your refrigeration problems, call your nearest General Electric Dealer. *General Electric Company, Air Conditioning Department, Section C8325, Bloomfield, New Jersey.*

WALK IN. An easy-to-assemble walk-in room adjustable to any size and shape. Available for standard or low temperature refrigeration.



G-E CONDENSING UNITS. New line of compact condensing units gives you more refrigeration per power dollar, plus long life, efficient service.

GENERAL ELECTRIC

Better Refrigeration

FOR HIGHER YIELDS, HEAD OFF DISEASES WITHOUT CHEMICAL INJURY . . .

It's no longer enough to control diseases. You want that, to be sure, but you also want to keep your trees thrifty and healthy. That's been the goal of Du Pont research . . . better but safer fungicides. As a result you have such outstanding products as "Fermate" and "Zerlate" fungicides.

Apple and Pear Scab—Control them effectively with "Fermate" fungicide without damage to fruit set, fruits or foliage. With "Fermate" you also control rusts, black rot, bitter rot, leaf and fruit spot and other fungous diseases, without danger of chemical russeting.

Peaches, as well as plums, apricots and cherries can be kept clean of brown rot with sprays or dusts of "Fermate." On fruits just before picking, Du Pont "Zerlate" fungicide is ideal. Its lighter-color residue does not show, yet protects the fruit from brown rot after harvest. "Zerlate" also is outstanding for pecan scab. In Georgia tests, the crop was kept clean, and foliage remained green till October, long after foliage on trees sprayed with other materials was faded and withered.

Cherry trees keep their vigor when you control leaf spot with "Fermate." The trees keep their foliage through the summer, and there are no diseased leaves to drop and carry the disease over winter. On sour cherries, Copper-A has given outstanding results.

Grapes can easily be kept free of black rot with "Fermate." You'll have the full green foliage and higher yields of better-quality grapes.

can be protected with "Fermate." Use it for cranberry fruit spot, raspberry anthracnose and currant leaf spot.

SEE YOUR DEALER *now for further information. "Fermate" and "Zerlate" are only two of the Du Pont family of pest control products made for your needs. The Du Pont Company, Grasselli Chemicals Dept., Wilmington 98, Delaware.*

DU PONT INSECTICIDES: DEENATE* DDT, LEXONE* and MARLATE* Insecticides, KRENITE* Dinitro Spray, LORO* Contact Insecticide, Cotton Dust No. 10, Cryolite, Lead Arsenate, Calcium Arsenate, Nicotine Products, Lime Sulfur, Phenothiazine-Lead Arsenate Mixture, Paris Green.

DU PONT FUNGICIDES: ZERLATE*, FERMATE*, and PARZATE* Organic Fungicides, COPPER-A Fixed Copper, SULFORON* and SULFORON*-X Wettable Sulfurs, Sulfur Paste, KRENITE* Dinitro Spray, Bordeaux Mixture.

OTHER DU PONT MATERIALS: 2,4-D WEED KILLERS, AMMATE* Weed Killer, Du Pont Spreader-Sticker, PARMONE* Pre-Harvest Fruit Drop Inhibitor, Spray Adhesive.

* Reg. Trade Mark of E. I. du Pont de Nemours & Co. (Inc.)

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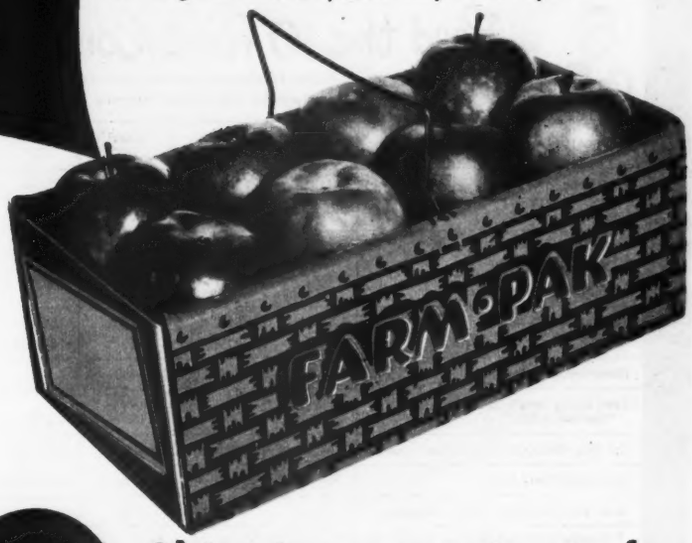
DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

FARM-PAK Baskets

A big success last year. Made of strong corrugated board attractively printed in red and black. Space to stamp or label your name and address. Now available in 3 sizes—4, 8, and 12 quarts. Shipped to you flat for convenient storage in limited space. Easy to set up.

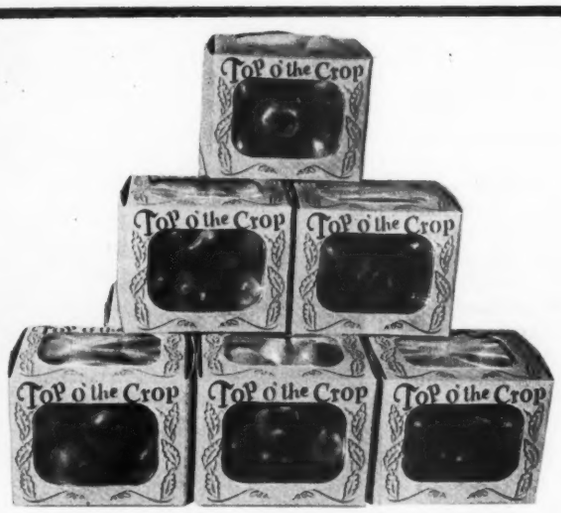


Every successful producer of fruits and vegetables knows it takes the best of modern fertilizers and pest control methods and materials to make money. Many have discovered also that modern packaging and merchandising are just as important. They find what they need in the 1948 line of baskets, cartons, and corrugated shipping containers produced by The Ohio Boxboard Company especially for fruit and vegetable growers. Write today for our new book "Packaging Farm Products for Profit."

Shipping containers for apples and mushrooms

This line includes: (1) A master container of 200-lb. test corrugated board holding twelve 4-lb. Top-o'-the-Crop Apple Cartons; (2) Apple box, one bushel, (2200 cubic inches) made of strong corrugated board, printed in red and green. Hand holes at ends. Double sidewalls and triple ends for adequate stacking strength. (3) A master container for eight 4-qt. FARM-PAK Baskets; (4) Our special mushroom container holding 16 pints of mushrooms. Container is shipped to you flat and requires no gluing, stapling, or taping to set up.

THE OHIO BOXBOARD CO.
RITTMAN, OHIO



TOP O' THE CROP Apple Cartons

The big success of this 4-pound apple carton in 1947 was due to special and exclusive advantages for sales display and convenience in packing. May be jumble- or place-packed semi-automatically or by hand. Rigid carton construction protects against bruising in shipment and handling. Ideal for mass display. Easily set up without gluing or stapling.

FREE

Mail coupon for this book of valuable information on selling produce.

The Ohio Boxboard Co., Rittman, Ohio
Please mail me a copy of
"Packaging Farm Products for Profit."

Name.....

R.F.D. or St. No.....

City..... State.....

Compare New DODGE "Job-Rated" TRUCKS feature for feature!

Read this 10 Point Comparison

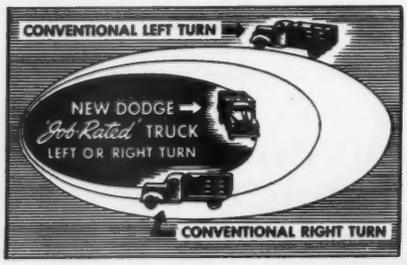
(Dodge Model F-152; 14,500 pounds Gross Vehicle Weight—Comparable Competitive Models.)

FEATURES AND ADVANTAGES	DODGE "Job-Rated" TRUCK	TRUCK "A"	TRUCK "B"	TRUCK "C"	TRUCK "D"
Wheelbase	152 in.	161 in.	158 in.	159 in.	161 in.
Cab-to-Axle—to take 12-foot body	84 in.	84 in.	84.06 in.	84 in.	84 in.
Wide-Tread Front Axles (shorter turning—more stability)	62 in.	56 in.	60.83 in.	58⅝ in.	58 in.
Modern "Cross-Type" Steering	Yes	No	No	No	No
Turning Diameter * —Left —Right	50½ ft. 50½ ft.	61½ ft. 61½ ft.	60½ ft. 54½ ft.	54½ ft. 54½ ft.	66½ ft. 66½ ft.
Maximum Horsepower	109	93	100	93	100
Total Spring Length (Front and Rear "Cushioned Ride") †	194 in.	171⅝ in.	162 in.	176 in.	182 in.
Cab Seat Width (Measure of Roominess) ‡	57¼ in.	52¼ in.	51½ in.	47½ in.	52¼ in.
Windshield Glass Area ▲	901 sq. in.	713 sq. in.	638 sq. in.	545 sq. in.	713 sq. in.
Vent Wings plus Rear Quarter Windows	Yes	No	No	No	No

* To outside of tire (curb clearance.) Computed from data based on tests or computations obtained from usually reliable sources. † All four springs. ‡ Measured from production models. ▲ Computed from width and depth measurements; no allowance for contours.

Better Weight Distribution... Easier Handling... Shorter Turning Diameters

You can turn these new Dodge "*Job-Rated*" trucks in much smaller circles, both right and left. You can back through farm gates, or maneuver in barnyards with much greater ease. This is due to a new type "cross-steering," shorter wheelbases, and wide tread front axles.



Front axles have been moved back, engines forward, placing more load on the front axle. While cab-to-axle dimensions are the same, wheelbases are shorter, giving better weight distribution, and increased payload.

This new weight distribution, combined with longer springs, and "Air-O-Ride" seats, produces a marvelous new "cushioned ride."

MAY 1948

VOL. 68 No. 5

CONTENTS

Letters to the Editor 11

Pollination the Secret of Fruit Set 13
By Richard Wellington

Is Artificial Pollination Practical? 14
By R. M. Bullock

Help the Bees Help You 16
By Russell H. Kelty

Have You Considered Growing Beverage Apples? 17
By F. C. Bradford

Nationwide Fruits 18
Cherries, Pears, Citrus, Apples, Raspberries, Grapes, Peaches

State News 20

Don't Forget the Industrious Honey Bee 22
By T. J. Paisley

Nut Growers News 39

Editorial Page 46

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E. G. K. MEISTER
Publisher

Editorial Staff

R. T. MEISTER — H. B. TUKEY
T. N. FERRIS, JR. — K. A. HOLMAN

Advertising Manager
EDWARD L. MEISTER

BRANCH OFFICES AND REPRESENTATIVES

NEW YORK CITY, Richard Whiteman, Grand Central Terminal Bldg., Room 1720. Phone—Murray Hill 6-0784

CHICAGO, Peck and Billingslea, 185 No. Wabash Phone—Central 0465

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[PRINTED IN U.S.A.]

For MAXIMUM SPRAY DEPOSITS Use "ORCHARD BRAND"

SPRAYS & DUSTS

Orchard Brand Spray Materials for the Fruit Grower include:

GENITOX* 550

Micro-particle 50% wettable DDT powder, for many insects attacking fruits.

ASTRINGENT & STANDARD LEAD ARSENATE

The nation's leading "Leads."

G-6 BHC WETTABLE SPRAY POWDER

For over-wintering and first-brood curculio. To be used only according to recommendations of local authorities.

NICOTINE SULFATE

For aphis and pear psylla.

GENITHION†

Contains Parathion, for mite control.

MICRO-DRITOMIC* SULFUR

With particles of true micron fineness, for apple scab and peach brown rot.

DRITOMIC* SULFUR

Peach growers' standby, for brown rot and scab control.

SPRAYCOP*

Highly stable neutral copper fungicide, for copper responding fungous diseases.

* Reg. U. S. Pat. Off. † General Chemical Trade Mark

Smooth, unbroken spray covers on fruit and foliage mean better insect and disease control. They "pay off" in cleaner, better fruit at picking time.

To the commercial fruit grower, it is a foregone conclusion that the protection of his orchard against insect and disease damage, calls for spray materials that have the best possible "killing wallop" built into them. But along with this, the spray materials must possess still another important quality: maximum covering ability. The spray deposit on fruit and foliage must be smooth and uniform, with minimum loss of the insecticide or fungicide in the spray run-off. Only then can the grower be sure of having the important extra measure of spray protection that means more of the "money fruit."

Every spray material General Chemical produces is carefully developed to meet all of these requirements. Before it can be offered to growers, its covering qualities, as well as its insect or disease control effectiveness and all-around spray efficiency, must be proven through research in the laboratory and in the field. Only then can a product bear the Orchard Brand trade-mark.

GENERAL CHEMICAL DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.
Offices Serving Principal Agricultural Centers Throughout The Nation

HERE'S THE "NEW WAY" IN FARM WORK

—AND A "NEW DAY" IN TRUCK VALUE!

CHEVROLET **Now you can know true on-the-job truck value with these new Chevrolet trucks for 1948! They're the lowest-price line of trucks in the volume field with the latest and greatest features of Advance-Design—features that provide new operating ease and convenience and make every invested dollar count by putting a new high value to work! See these new trucks now at your Chevrolet dealer's.**

CHEVROLET MOTOR DIVISION, GENERAL MOTORS CORPORATION, DETROIT 2, MICHIGAN

Grades seem to level and loads lighten with the new Chevrolet-developed SYNCHRO-MESH 4-SPEED TRANSMISSIONS in heavy-duty models that provide greater operating ease and efficiency.

Mounted on the steering column, the new Chevrolet GEARSHIFT CONTROL offers new convenience and ease, in all models with 3-speed transmissions.

Proved, and now IMPROVED, Chevrolet's powerful VALVE-IN-HEAD ENGINE now offers greater durability and operating efficiency.

The revolutionary new Chevrolet FOOT-OPERATED PARKING BRAKE permits new effortless braking with greater safety, and provides new clear floor area on 3-speed transmission models.

Heavy-duty models have new strength and durability with SPLINED REAR-AXLE SHAFT ATTACHMENT to wheel hubs. SPRINGS are heavier and more durable, and propeller shaft has NEW BEARING-SEAL DESIGN.

ONLY CHEVROLET TRUCKS HAVE ALL THESE ADVANCE-DESIGN VALUES:

—The Cab that "Breathes"*—Flexi-Mounted cab—Uniweld, all-steel cab construction—Large, durable, fully adjustable seat—All-round visibility with rear-corner windows*—Super-strength frames—Full-floating hypoid rear axles—Specially designed hydraulic truck brakes—Standard cab-to-axle length dimensions permitting interchange of bodies—and *many* others.

Fresh air heating and ventilating system and rear-corner windows optional at extra cost.

Advance-Design

CHEVROLET TRUCKS

FOR 1948

LETTERS TO THE EDITOR

Apple Pollination

Dear Sir:

I have an apple tree which seems to be healthy and vigorous, yet its fruit drops each year when it is about the size of marbles. The tree is in good soil, has made wonderful growth, and has been sprayed. Can you tell me what is wrong?

Edna, Kans. Richard M. Stewart

Reader Stewart probably needs another variety to cross-pollinate his apple tree. He does not say what variety the tree is, but it may be self-unfruitful. The sterility can be corrected by planting another variety suitable for pollinating purposes near it, or by grafting a branch of another variety into his present tree.

A complete discussion of pollination may be found in this issue of AMERICAN FRUIT GROWER.*—Ed.*

Which Romanite?

Dear Sir:

Your correspondent who has asked for trees of the Romanite apple may run into difficulties, for several different varieties have been grown under this name. Which one does he want?

Some of the Romanites are the old southern variety "Little Red Romanite," the Gilpin or Carthouse apple, and the old Rambo. Of these probably the Rambo is the best in quality. Trees of Rambo may be obtained from the Tualatin Valley Nursery, Sherwood, Ore., but I do not know where the others may be found.

Center Conway, N.H. Ira Glackens

Peach Brown Rot

Gentlemen:

I am a regular subscriber to your magazine although I have sold my farm and now have only a few fruit trees in my yard.

Last year, despite the fact that I sprayed my peach trees several times, they were attacked by brown rot, and I lost about half of my peach crop. What treatment do you recommend for the coming season?

Columbus, Ohio H. E. Banker

The best control of peach brown rot is achieved by use of flotation or wettable sulfurs. These are applied at the rates of 12 pounds of flotation sulfur, or 8 pounds of wettable sulfur, to 100 gallons of water.

Four applications should be made, and their timing is important. The first is made at the pink stage of bloom just before the blossoms open; the next, about two weeks after the shucks fall from the developing fruits. Three weeks before harvest the third spray is applied, and the last one, which is very important, is put on seven to 10 days before harvest.—Ed.

Frost Prevents Grape Set

Gentlemen:

Last year, and in previous years, we have had trouble with our grapes. Sometimes they bloom, but they do not always set fruit. One year full branches may be set, and another year there may be no bunches at all. What is the cause of this failure to set fruit?

Burlington, Ky. William H. Moore

The failure of grape flowers to set full clusters of fruit is usually the result of unfavorable weather conditions at the bloom period or occasionally just before bloom. Some of the flowers may be frosted and, even though they look perfectly normal through the blooming period, the small berries will fall off. Certain commercial vineyards in Pennsylvania, Ohio, and New York have lost as much as 90 percent of their crops because of this lack of berry setting.—Ed.

Cover Captions

Dear Sir:

Just a word of appreciation for the caption on your Johnny Appleseed cover of the January issue. My friends and I have often wondered about the identity of the varieties shown on your covers. It would add to their interest and value if you could label them with a word of explanation. We keep all the issues for reference.

Mission, Kans. F. H. Lilly

Many others have expressed Reader Lilly's opinion, and in the future AMERICAN FRUIT GROWER *will, whenever possible, identify its cover varieties on the table of contents page.—Ed.*

Hardy Rootstock

Gentlemen:

Can you advise me whether it is possible to obtain for planting McIntosh or other apple trees that have been top-worked on the hardy hibernal rootstock mentioned recently in the AMERICAN FRUIT GROWER?

Belton, Mont. Harold Ridenour

It is difficult to buy McIntosh or other apple trees that have been top-worked on hardy trunks. Generally, the nurseries will sell the hibernal stock, and it is necessary for the grower to do his own top-grafting. —Ed.

Johnny Appleseed

Dear Sirs:

I read the story of "Johnny Appleseed" in the January issue of AMERICAN FRUIT GROWER with interest. However, it seems to me that when I read the story years ago, Johnny returned later and grafted the trees that he had planted. Your story does not mention this grafting. If he did return, I should think it would have been mentioned in the story.

Toledo, Ohio Frank J. Scheller

According to one account, Johnny Appleseed considered pruning and grafting to be wicked. Like Paul Bunyan, Johnny Appleseed's real identity and history are entwined in legend and lore, and facts vary from one account to another. It may well be that he returned to graft the trees that he had planted.—Ed.

Gumming Only a Symptom

Dear Sir:

I have about 200 young trees ranging from two to seven years of age and all have made good growth and look fine. During the last two summers the plums, peaches and cherries have been "running" gum from the bark all the way up the trunk into the limbs and a number of trees have died.

Hemlock, Mich. W. E. Smith.

Gumming of branches and trunks is a symptom of an injury which may be due to a number of causes including winter injury, wet feet, or borers. To determine the cause, a thorough inspection of the trees is necessary. It would be wise to consult with neighboring growers or the county agent who is familiar with local conditions and problems. —Ed.

WHEN red mite is a problem, simply add 1½ pints of D-X Spray to your regular DDT or arsenate of lead cover sprays. Three sprays usually give thorough red mite control — and at the *same time* increase your kill of *codling moth*. One gallon makes 600-800 gallons of spray.

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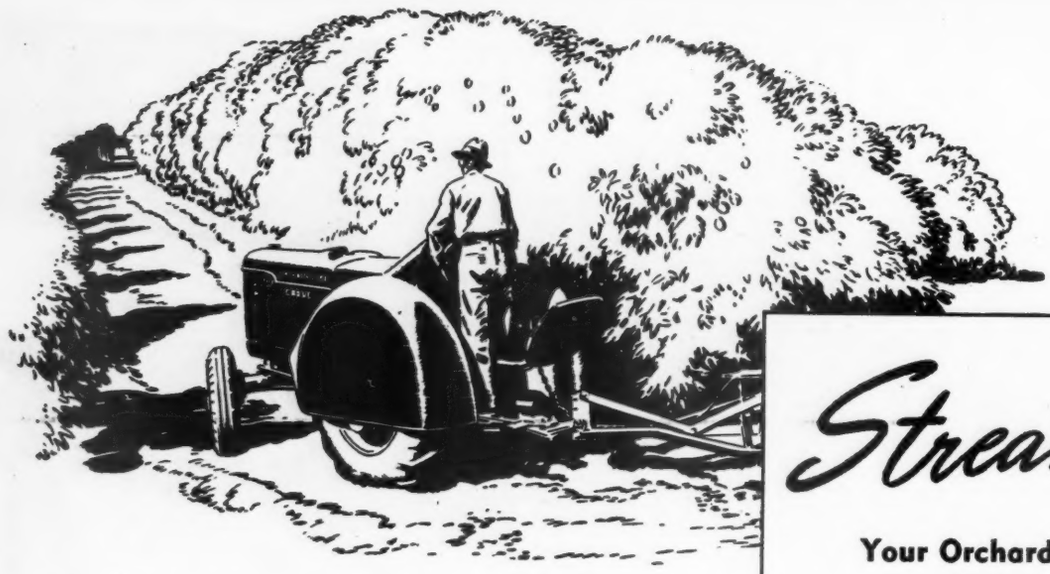

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POLLINATION
THE SECRET OF FRUIT SET

Variety Selection Can Determine The Success of Pollination

By RICHARD WELLINGTON, *Cornell University*

THE RELATION of fruit setting to pollination is now well understood by all the better and more experienced fruit growers. Although the need of pollination was established a long time ago, its commercial significance was not fully appreciated until the growers commenced to standardize and limit their plantings to a few varieties. When our forebears had their orchards filled with miscellaneous sorts, or grew the self-fruitful Baldwin, no pollination difficulties were experienced.

The growers of solid blocks of the self-unfruitful McIntosh, Delicious, and Northern Spy apples, the Bartlett pear, and the apple varieties with pollen of low germination, such as the Rhode Island Greening, Gravenstein, and Stayman Winesap, soon realized that their crops were below par. Also, those who had planted unfruitful or cross-incompatible combinations, such as the Bartlett and Seckel pears and the Bing, Lambert, and Napoleon sweet cherries, were in the same predicament. The germination quality of pollen is not a criterion of incompatibility, although it is obvious that varieties with poor pollen can not be satisfactory pollinators. Possibly these known facts should not be reiterated, but there are always newcomers in fruit growing, and they should be warned of known pitfalls.

In the past there have been conflicts in opinion, even among the investigators, as to whether certain varieties were self-unfruitful or self-fruitful. In some cases the discrepancy resulted from the fact that the varieties were different, even though under the same name. This confusion of varieties probably arises less frequently within a single country than between foreign countries. However, one finds discrepancies in the United States. For example, there are two distinct Deacon cherries and the self-fruitful Italian prune is sometimes called the German, a self-unfruitful variety. The Shropshire plum of England is very different from the Shropshire grown in New York, and the Green Gage plum of England is not the same as our Reine Claude of the Green Gage group. The Bartlett pear, although self-unfruitful in the eastern states, is self-fruitful in certain parts of California. Some time ago a grower in California said that the Concord Seedless grape produced as many, if not more, seeds than did the Concord. In New York the Concord Seedless has always developed seeds when crossed with other varieties; however, the seeds usually abort at an early stage and produce only soft embryos although occasionally a well-formed seed develops. It is not improbable that a region which can produce Bartlett pears without cross-pollination can produce good seeds in the Concord Seedless grape.

The time of blooming is most essential to pollination, for if one variety has passed the blooming stage before the other starts, the grower might as well have but a single variety in his orchard. In the northern states this discrepancy is less pronounced than farther south where the blooming season may be prolonged. Marked differences, however, do occur in the northern states, for during cold seasons the period between full bloom of the apricot and apple may stretch over a month, while during hot weather this period may be telescoped into one week. When the latter occurs, late blooming varieties will pollinate the early bloomers satisfactorily and vice versa. These variations are mentioned merely so that a grower in one part of the country will not base his plantings on the recommendations for an area where the conditions are dissimilar.

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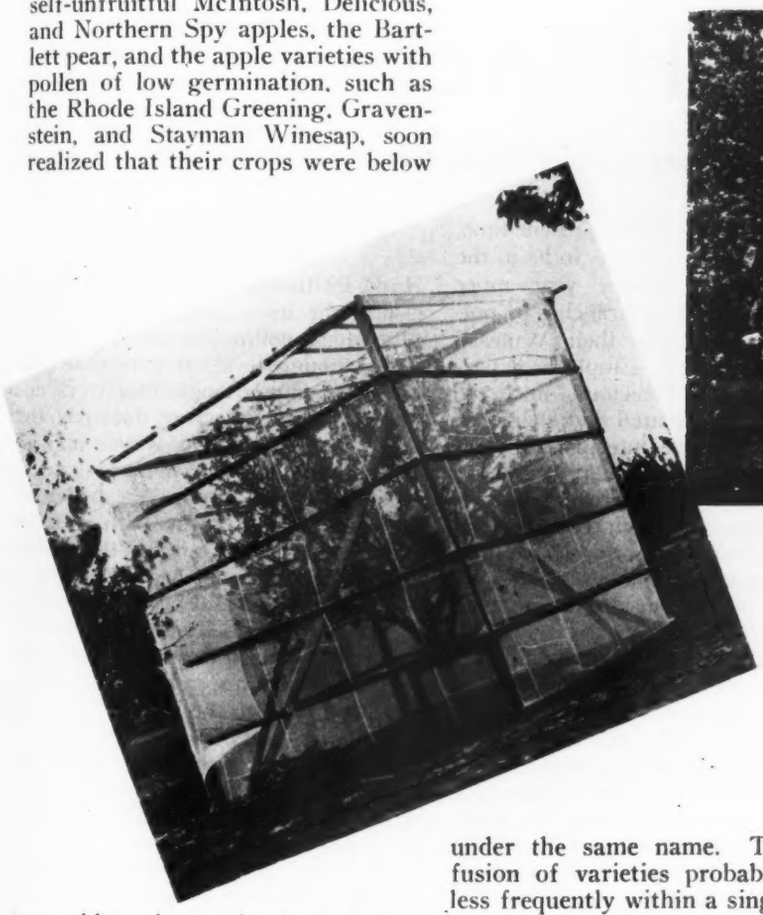


Two ways to test self-fruitfulness. Blossoms are hand-pollinated. In photos, tent and bags are used to prevent contamination before and after pollinating.

IS ARTIFICIAL POLLINATION PRACTICAL?

By R. M. BULLOCK, *State College of Washington*

THE WASHINGTON apple grower's interest in artificial pollination has increased during the last few years because of the heavy removal of pollinator trees in the past. The condition is acute in many orchards because of the removal of such varieties as Jonathan, Rome, Yellow Newtown, White Winter Pearmain, and Winter Banana. All of these varieties are good pollinizers, even though they may be less valuable than other varieties as a commercial crop.

Artificial pollination was first applied on a commercial basis by Dr. L. H. MacDaniels in 1930 with his work on McIntosh and Northern Spy at Cornell University. In the Pacific Northwest the American Fruit Growers were the first to use commercial hand-pollination in Delicious orchards during 1934, involving 2,334 trees. The results from the point of view of fruit set and expense were satisfactory, and by 1937, approximately 1000 to 1500 acres of apples were hand-pollinated in the Wenatchee-Yakima districts.

This trend toward increasing interest in using artificial pollination commercially has continued in the Pacific Northwest until nearly every grower has used this method of insuring an adequate fruit set in Delicious and Winesap blocks. At the present time, however, the trend seems to be in the other direction. Every year more growers are grafting branches of pollinator varieties into their Winesap and Delicious trees. Emphasis is particularly on the Delicious, since the Winesap is pollinated by Delicious. More growers are interplanting pollinator trees where other trees have been removed or wherever there is sufficient space for such trees to grow. Many of the new plantings have their varieties selected and arranged with adequate pollination taken into consideration.

Commercial artificial pollination should be, and is, considered more and more by growers of the Pacific Northwest as an insurance of a better set of fruit. It should be practiced only in solid blocks of Delicious, Winesap, or other self-sterile varieties in which the fruit set has been low during the preceding years because of inadequate pollination. With the use of the airplane, the pollen bomb, and various other methods of dusting or spraying pollen on the trees, there has been a great increase during the last three years in the attention given artificial pollination. These methods have been evaluated for Pacific Northwest conditions.

METHODS OF ARTIFICIAL POLLINATION

Hand-Pollination. Hand-pollination is still the most satisfactory method of artificial pollination for apple trees. Even though it is an expensive and time consuming operation, it is dependable and will more than pay for itself in fruit returns where natural means of pollination are inadequate.

The operator applies the pollen to each individual flower with a small stiff pig-hair brush, or with the rubber end of a lead pencil. A good operator, with good pollen and favorable weather conditions, can set from 90 to 100 percent of the flowers touched. The brush or pencil must touch each of the five stigmas in the center of each flower with a gentle pressure so as to make sure that pollen is deposited there. Flowers that have opened only a few hours previous to the operation are most receptive. Particular attention should be given the shady side and tops of trees since, in most orchards, native insects or bees work best in the warmest and protected portions of the trees. In orchards with a heavy bloom, one flower in every five clusters of bloom is sufficient for a heavy set and even then, some thinning may be required. With judicious operation, thinning can be

Above—Workers gather pollen in the field. Above left—Operator brushes stigmatic surfaces with pollen.

greatly reduced or practically eliminated through the use of hand-pollination where natural pollinating agents are not available.

It will require approximately 40 to 50 man hours to hand-pollinate an acre of mature apple trees, depending on the proficiency of the individual. In general, women or children have proved to be more proficient at hand-pollination than men; however, moving the ladders requires some men on the job. At 80 cents an hour the labor, without supervision, would cost from $32 to $40 an acre. The pollen, at $4 an ounce, and three ounces an acre, would cost $12. Thus the cost of hand-pollination ranges from $44 to $52 an acre depending upon the speed of the workers.

Bellows type hand duster. This method of artificial pollination has been used with not too favorable results. It is very wasteful of pollen and gives a very uneven set of fruit. Extreme care must be exercised with this method, or the thinning operation will be greatly increased. The portions of the branches in direct line with the stream of dust set fruit heavily while adjoining branches set no fruit at all. The hand duster is better adapted to the pollination of cherries than to apples.

Small dusters designed to pollinate individual flowers, or wands where individual flowers are touched, appear to have some promise, but are in the process of development at the present time. It must be emphasized that, in using a duster, great care must be exercised to avoid causing excessive set on some branches while others have none.

Water-pollen sprays. Applying pollen in water sprays has been unsatisfactory. In a water mixture, pollen does not adhere to the stigmatic surfaces of the pistils. It is much the same as attempting pollination in a heavy rain. Pollen grains are severely injured after being in water from 15 to 30 minutes.

Airplane pollination. Many growers have applied pollen to their orchards during the last three years by means of dusting from an airplane. This method of application has been very thoroughly checked. In no case has there been a significant increase in fruit set as a result of this method of application, although growers from other areas have reported successful pollination by aircraft application.

In applying pollen by airplane, it has been the practice to use 24 ounces of a pollen mixture and a diluent substance per acre. With diluted pollen at $1.50 an ounce, the cost of the pollen is $36. The cost of application by airplane is $5 an acre, bringing the total cost of application to $41 an acre. This is only slightly less than the cost of hand application.

Pollen bomb pollination. The pollen bomb method of applying pollen to fruit trees has not been satisfactory. This method has been checked as thoroughly as the airplane method, and no increase in fruit set has been found in any instance.

A commercial application of pollen by the bomb method was observed on a group of 15 Bing cherry trees without any effort to cover parts of the tree or make blossom counts. The trees were carrying a snowball bloom. There were no pollinator trees in the area although a strong stand of bees was working throughout the group of trees. The fruit set on these 15 trees was so low that it was not considered by the grower to be worth harvesting.

The pollen bomb has a damaging effect on the pollen. The viability of pollen samples collected at the time the bomb was exploded proved to be reduced nearly to zero when germinated in the laboratory.

Bee hive inserts. A semi-artificial method of pollination has been used to some extent. This incorporates a pollen pan placed in the opening of the hive so that the bees, when leaving the hive, will pick up the pollen placed there and spread it through the orchard. Two types of pollen inserts have been used at the Tree Fruit Experiment Station. The work was reported last year by Overley and O'Neill. One was a metal pan constructed to fit into the opening of the hive. It had a hinged top to permit placing pollen on the floor of the pan. The bees were required to enter and leave through the same opening. The other was of wooden construction, made to fit into the exit hole of a two-opening hive. The pollen was placed in the section of the insert where the bees were forced to pass on leaving the hive.

On the basis of results obtained by using these two types of pollen inserts, their value is very questionable. For the first 30 minutes after they were placed in the hives, there was a general confusion of the bees; they

(*Continued on page* 36)

Hand-pollination in the field.

HELP THE BEES HELP YOU

Bee Performance Depends On Intelligent Handling

By RUSSELL H. KELTY
Michigan State College

BEEKEEPERS and orchardists are working together now that the danger of spray injury to orchard bees has been minimized. The result of this co-operation has been better set in orchards all over the United States. Two years ago many beekeepers were reluctant to rent their bees to orchardists because of the danger of poisoning the insects with the new specific-action spray chemicals. The degree of the danger was not known at that time, and unusually heavy losses from spray poisoning had been reported generally. One of the important causes of this, however, was a period of unusual weather conditions which resulted in irregularity of spraying and damage to bees.

Since that time the situation has improved. It has been found that the new insecticides, including DDT, kill no more bees than did the older arsenic compounds. The problem is to awaken the fruit grower to his responsibility for spraying at a time when nectar will not be poisoned in the tree blossoms or on cover crops adjacent to the orchard.

Beekeepers agree that the safest practice is to bring the bees into the orchard just before the blossoms open and to remove them as soon as the petals fall and before any poisonous sprays are applied.

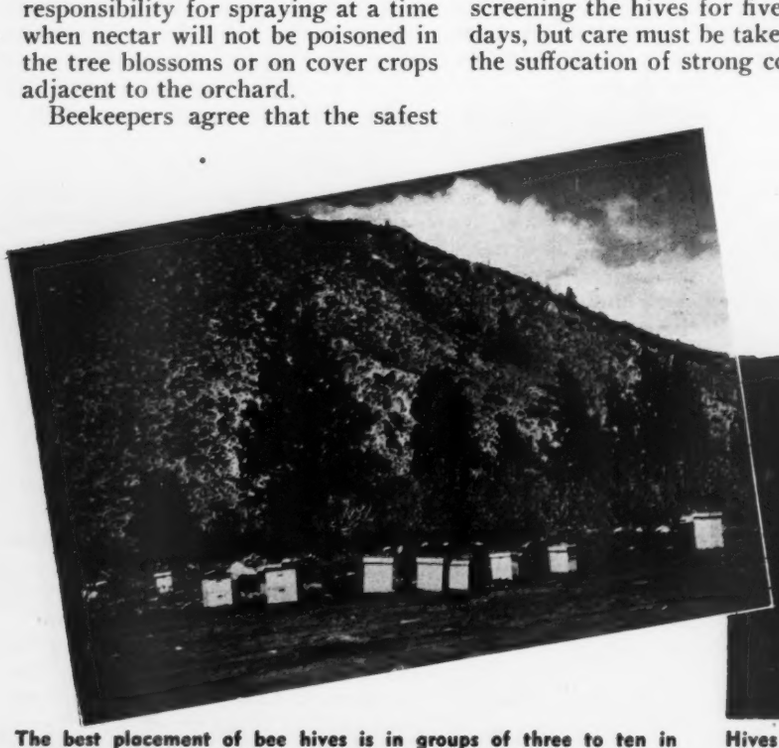
Over a period of years reliable beekeepers have observed that, with few exceptions, hives which are left in commercial orchards throughout the year produce smaller crops of honey than those which are placed outside of the fruit growing area. Therefore, fruit growers who keep their own bees will find it advantageous to move them out of the orchard into general farming areas after the bloom period.

Unless bees are moved farther than they range in flight, which is two miles, many return to the former location and are lost. Thus, when bees are moved short distances (¼ to ½ mile) for distribution through the orchard, many of the field bees (the pollinators) are confused and lost. This may be prevented by screening the hives for five to seven days, but care must be taken against the suffocation of strong colonies at temperatures above 60° F.

Many fruit growers prefer renting the necessary number of bees from responsible beekeepers; however, they should know enough about strength of colony and performance of the bees during the blooming period to know whether the beekeeper is properly fulfilling his contract. In some areas fruit growers have co-operated by jointly purchasing enough bees to do the job of pollination. To be assured of proper handling in these cases they have often hired responsible, skilled beekeepers to install package bees in hives during the bloom period or have arranged with the beekeeper to care for the bees the year around on a share basis. In this case, the beekeeper would see to it that the colonies were strong at blooming time, and would handle the job of getting the bees in and out of the

(*Continued on page* 31)

Strong colonies like this are worth five weak ones for pollination purposes.



The best placement of bee hives is in groups of three to ten in open sunshine, but behind a windbreak. Prevailing winds blow from behind the hill shown in the photo above.

Hives should be securely fastened together with lath or staples before moving. The top screen is beneath the cover, which is removed when the hives are moved.

HAVE YOU CONSIDERED GROWING BEVERAGE APPLES?

By F. C. BRADFORD
U. S. Department of Agriculture

We have cooking and eating varieties, but why not varieties strictly for juice, asks the author in this highly significant article.

THE PRODUCTION of apples, specifically for use in juice, may seem more plausible if one adjusts his thinking to elimination of any color requirement, to preference for small apples, to a reduced amount of spraying, to greater tolerance of blemishes, to harvesting by shaking the tree, and to handling in bulk. If, in addition, the apples thus grown will produce, when blended with standard apples, a juice of better quality than that of either alone, the prospect seems worth careful consideration.

It is no secret that some good eating apples produce juice that is sadly lacking in beverage character. Processors recognize this fact and blend several varieties when manufacturing juice. This course, however, is only a palliative and not a remedy because all dessert and cooking varieties are almost invariably deficient in certain requisites for a well-balanced beverage. American partiality to bland types of eating apples, which constitute the great bulk of our crop, makes the acid deficiency in much of the juice very pronounced and impairs its thirst-quenching properties. None of our standard varieties, eating or cooking, has the astringency necessary to give proper tang to the beverage. Our bland apples are mild, not because of abundance of sugar, but rather because of lack of acidity, and most apple juice would seem richer if it contained more sugar. Therefore, blending the juice of apples grown specifically for blending with the juice of our present varieties would yield a superior product.

For American use, then, the apples grown specially for juice should be high in acidity and in astringency. The more acid and bitter they are, the more juice of the standard varieties they will balance to produce high beverage quality after blending. In most cases, high sugar content will be desirable. The fruits should be small because small apples bruise less easily than large ones when harvested by shaking, and because they have a higher proportion of skin and external pulp in which several desirable constituents are more concentrated. They should fall readily from the tree when harvest-ripe. Of course, cheapness of production, involving early, frequent, and heavy bearing, resistance to winter cold and spring frosts, and minimum spraying requirements, will be perhaps even more important than it is in standard varieties.

European Cider Apples

In 1928 Caldwell published analytical data on the beverage value of a long list of apple varieties, setting forth clearly the deficiencies of the standard varieties and indicating possible sources of apples whose juice would best correct the deficiencies. In particular, he directed attention to a number of French cider apples, a pomological group virtually unknown in this country since the temperance movement around 1830. They are varieties grown primarily, often solely, for the production of cider. For differentiation from eating and cooking apples, they may, by parallel phraseology, be termed the drinking apples, or in more dignified terms, the beverage apples. They are produced chiefly in Normandy and Brittany, with a parallel development across the Channel in western England and some in northwest Spain. Since they are intended for manufacture of fermented cider, they have one common trait —rather high sugar content of the fruit. In acidity and astringency they vary and are classified as sweet, sharp, bitter-sweet or bitter-sharp. Blends are made accordingly. In the "vintage" varieties, which are few, the juice is so constituted as to make high quality cider without blending; an example is Kingston Black. Recent studies in England and in France agree in assigning to the cider varieties as a group a vitamin C content much higher than the average for the eating and cooking varieties. Reine des Pommes and Yarlington Mills exceed our common varieties three- or four-fold in this respect.

Trees on the grounds of the Division of Plant Exploration and Introduction at Glenn Dale, Md., show the characteristics and the variability that appear in a collection of dessert and culinary varieties. The only striking peculiarities of the group are the small sizes of the fruits and the presence of an unusually large proportion of late blossoming varieties, some of them very late indeed. Some varieties make large trees and are slow in fruiting; others make small trees and fruit when young. Cases of defective pollen seem rare. The fruit of most varieties appears dry, rather than juicy, though its yield of juice under pressure seems generous. The fruits drop readily from the trees in most cases, though two or three shakings at considerable intervals would be necessary for complete harvest. On fallen fruit of the cider varieties serious bruises are less common than they are in the standard types. At Glenn Dale those varieties which have fruited cover the season from early August to mid-September, and some have kept rather well after harvest. In Europe they are harvested by shaking and are handled in bulk. Most of the milling for cider appears to be done in November and December.

As a group the European cider varities are probably not fully winter-hardy in northern orchards. Some of them have winter-killed at points in Canada where at least a few of the standard varieties thrive. Nevertheless, some have grown rather well at points in the United States. At Blacksburg, Va., a planting established by top working, around 1895, is still producing. Several French cider varieties grew for many years at Arlington

(*Continued on page* 36)

NATIONWIDE FRUITS

CHERRIES

● **A serious threat** to the cherry industry in Washington is the cherry fruit fly which lays eggs under the skin of the cherry. Since one female can lay 300 to 400 eggs, the damage can reach considerable proportions.

During the winter the flies are enclosed in small capsules in the ground. When spring comes, they come out of their shells, and for about eight to 10 days feed on the honeydew and moisture on the leaves. It is during this period of feeding and mating that spray applications must be made to eliminate them, according to experts at the State College of Washington.

Rotenone is the recommended insecticide in Eastern Washington, to be used in three applications—the first, when the fly appears around the first of June, the second, a week or 10 days later, and the third, 10 days after the second. The spray solution should contain 3 pounds of 4 percent rotenone, or 1½ quarts of liquid rotenone having 2½ percent active ingredients, to 100 gallons of water.

In Western Washington a spray which contains 3 to 4 pounds of lead arsenate and 1 quart of summer oil emulsion to 100 gallons of water is recommended. The spray schedule is different from that of Eastern Washington with first application being made on May 20 with the second in 10 days and the last, two weeks after the second.

Other control methods, besides careful spraying, are clean harvesting (removing and destroying all cherries which drop to the ground) and good orchard practices. Such methods will keep this cherry fruit fly from spreading and may, eventually, wipe out its threat to the industry.

● **The accent** is on the little cherry disease in Yakima, Wash.—a disease which results in partly developed cherries of poor color. If allowed to spread, the disease, in five years, could wipe out the $6,000,000 cherry industry in the valley, says Cecil Clark, a leading soft fruit grower.

The problem demands immediate attention to stop the spread of the disease before it is too late to save the trees which are still untouched. Growers have been strongly urged to cut down their diseased trees even though they may give a little income for two years. Some growers have asked for compulsory removal of the trees, but no legislation has been passed as yet.

The Little Cherry Committee of the State Cherry Institute has adopted a three-point program with continued voluntary removal, increased research, and another survey of the extent of infestation as its main objectives.

PEARS

● **Results of a** study in the Pacific Northwest indicate that using a weak solution of 2,4-D for retarding fruit drop of Bartlett pears is less expensive than using a standard spray of naphthalene-acetic acid. After a three-year comparison between the two, Dr. L. P. Batjer of the USDA reports that 2,4-D was found to be as effective as the standard spray while costing less.

It was also found that the weaker solution did not harm the foliage or cause the fruit to mature too early; in some cases the stronger spray had done both.

CITRUS

● **Florida has a new** variety of orange that can be harvested in June, July and August, after the Valencia crop has been moved. Called the Pope Summer Orange after Fred W. Pope who discovered it 30 years ago, it is a seedless variety with a thin skin, deep coloring, and smooth texture, and grows to a popular size. According to F. J. Durkee, Jr., of the Pope Summer Nursery, many acres have been planted with this variety in Florida, and at present there is no competition on the market because neither California nor Texas has a comparable variety.

● **Maintaining** the proper soil pH is very important in citrus production, according to Fred P. Lawrence of the Florida Extension Service. It is important because if the pH is either above or below the desired level, additional elements must be added to overcome deficiencies which occur because of unfavorable soil pH.

If the grower has a pH test run, he will know how much lime must be added to keep the soil slightly acid—the best type for citrus trees. The cost of fertilizer comprises, in most cases, about 50 percent of the total cost of raising citrus fruit, according to Lawrence; therefore, profits from a citrus grove may depend upon the economy of the fertilizing operation.

Running a pH test on citrus groves at least once a year is an accurate method for maintaining proper soil conditions without wasting fertilizer or upsetting the ratio of the micronutrient elements.

APPLES

● **Blossom-thinning** sprays, if properly applied to recommended varieties, will cut down production costs, increase the size of fruit, and solve the problem of "alternate bearing" (where the tree bears well one year but not the next). It is suggested by research men in Washington that these sprays be used only on "self-fruitful," or self-pollinating, varieties such as Golden Delicious, Jonathan, Rome Beauty, Yellow Transparent, and McIntosh.

The best time to apply blossom-thinning spray is when the trees are in full bloom so that the younger blossoms will be killed leaving the older ones uninjured. After the excess blossoms have been removed, the tree's strength can be devoted to the production of the year's fruit crop while developing next year's fruit buds.

When compared with hand-thinning, chemical thinning not only saves on labor but also keeps the trees producing top yields every year.

Experts caution growers not to use these sprays unless their trees are strong and have a heavy fruit set and are well-pollinated and fertilized. Until definite techniques have been established for this practice, the safest method is to do a light job and finish with hand-thinning, according to John Snyder of the State College of Washington. Scientists have experimented with various chemicals, and, according to Snyder, Elgetol, the sodium salt of dinitro-cresol, is the most effective.

(*Continued on page* 41)

WELL, I BEEN out in the orchard again, and the bees're workin' like crazy. Got a whoppin' big job to do, too, if they're goin' to get all them blossoms pollinated in time.

Read somethin' t'other day that kinda reminds a feller how lucky he is to be livin' in the United States. It was a piece in the paper about how Eastern fruit growers were gettin' all sparked up over the success of the Washington State apple advertisin' campaign right in their own back yards. Right off, the Eastern growers started improvin' their pack 'n' gettin' new boxes. They had to, so's the Washington apples wouldn't squeeze the Eastern ones right off the market. Just goes to show yuh what a lot of good can be done in a country where they allow honest competition.

Somethin' pretty nifty has been announced out Indiana way. It's special for the home fruit grower who just has a few trees and who's about to bust his buttons over all the different chemicals he's supposed to spray on his trees. It's called a "One-Package" spray, and it's got a combination of insecticides and fungicides that does almost anything. There's even a mimeographed spray schedule with it, and it can be used fer spray or dust. The liquid can be used in any old kinda sprayer yuh happen to have. This stuff has had good results in field tests in Indiana, Ohio, Missouri, Kentucky, and Illinois, and yuh can find out where to get it by writin' to your County Agricultural Agent. Sounds like just the ticket to me.

Yuh know, somebody said once that a body can understand best what the word "co-operation" means if he watches what happens when one wheel comes off the spray rig. Well, some outfit down Florida way, I think they call it the Citrus Exchange, is givin' away a scholarship to the University of Florida for some lucky feller to study agricultural co-operation. He can study any field, like marketing, purchasing, credit, or service. By jimminy, that's a heap o' studyin' just about co-operation, but I guess the whole world could stand a lot more co-operatin'.

Well, by cracky, from the way the good smells are driftin' out of the kitchen, I guess it's about supper time, so so long, neighbor!

State NEWS

• Frost hits Georgia-Carolinas Crop
• Wisconsin deer thrive on orchard diet

GEORGIA, *April 21*—A low of 26 to 28° F. on March 29 throughout the middle and north Georgia peach sections eliminated the greater part of the peach crop; only a fortunate few have peaches. Thirty-five percent of a normal crop would be a generous estimate for these two sections. The Fort Valley peach section was not damaged in this freeze.

Continued wet weather has greatly handicapped spraying operations. Some growers are using planes to make applications of tetraethyl pyrophosphate. Both chlordane and benzene hexachloride are giving much better plum curculio control than lead arsenate.—*Earl F. Savage, Ga. Agr. Exp. Station, Experiment.*

ILLINOIS, *April 20*—Peach crop conditions, from Carbondale south, are very good but the Centralia region has been hard hit by freezing and cold weather. Air drainage really paid off this year, for orchards on very low ground have lost their entire crop while those on good elevation will have about a full crop and the rest will vary between the two extremes. Probably the area as a whole will have about one-half as many peaches as last year while Illinois will have from 65 to 70 percent of the peaches it had last year. There will also be fewer apples, especially Golden Delicious with early apples decreasing because of frost damage.

Bloom this year is about 10 days earlier than last year. Weather has been reasonably cool with some very hot days mixed in. —*Curt Eckert, Sec'y, Ill. State Hort. Soc., Belleville.*

IOWA, *April 14*—Several orchardists from the southeastern portion of the state reported that if mild weather continues, many of the varieties will be ready for the pre-bloom sprays the week beginning April 19th.

The crop prospects are generally believed to range from fair to good.

Here in the Des Moines area, we have had light frost or near frost conditions for the past five or six days which has retarded somewhat the rapid growth of expanding buds and the new mouse-eared leaves.

Many growers and home owners report from some to complete loss of strawberry plantings, and a few Des Moines red raspberry growers expect a small crop this season because canes were killed back nearly to the ground. The blacks were not hurt as much.—*W. H. Collins, Sec'y-Treas., Iowa Fruit Growers' Assoc., Des Moines.*

KENTUCKY, *April 16*—The apple and peach crop prospects for 1948 are still favorable. Here in Lexington in the Experiment Station orchard, the temperature hit 24° on Easter Sunday but, fortunately, it rained early in the night with heavy clouds until 4 a.m. with no damage to peaches but some damage to apples.

This week I examined a peach orchard where brown rot caused a big loss last season. A liquid lime sulfur spray (2 gallons to 100) was applied in full bloom to a block of Red Bird variety, which is very susceptible to brown rot. This one spray practically eliminated blossom blight (brown rot canker on the one-year wood), and the trees set a full crop. Hale Haven and Elberta on adjoining rows, where no lime sulfur was applied, showed 25 to 40 percent rot canker at the base of the dried up blossom. Some states question the gain from this blossom spray, but it does a good job in Kentucky.—*W. W. Magill, Sec'y, Ky. State Hort. Soc., Lexington.*

MAINE, *April 17*—In Maine the advance of spring weather has been checked by a series of cold spells that passed over the State in the past two weeks. Late in March the weather was unseasonably warm but, apparently, this was not a long enough period to start fruit trees ahead of schedule. Precipitation is still pretty much in the form of snow which tends to keep the ground temperature from rising. At the present time it looks like a nearly normal spring season for fruit trees. Fruit bud formation at the present time has not been injured by the winter or spring frosts.

It is probably a little bit early to even say anything about the crop prospect but, generally speaking, we will probably have better than an average crop.

Farm and Home Week was held at the University of Maine in Orono; Prof. E. J. Rasmussen of New Hampshire spoke on factors influencing tree production and quality.—*Rockwood N. Berry, Sec'y, Maine State Pom. Soc., Livermore Falls.*

MASSACHUSETTS, *April 20*—Prospects appear bright for a good crop of apples in Massachusetts for 1948. A good set of fruit buds is expected to produce a bumper crop providing good weather prevails during the blossoming season.

Prospects for a full peach crop are not so bright as the record low temperature of March killed many peach buds. Some of the better located peach orchards may come through with a partial crop although it is doubtful if peach thinning will be much of a problem this year. Cultivated blueberries suffered some winter killing but not enough to destroy the crop for the season.—*W. D. Weeks, Univ. of Mass., Amherst.*

NAI MEETING

Annual meeting of the National Apple Institute is scheduled for June 17, 18, and 19 at the Hotel Penn-Harris, Harrisburg, Pennsylvania. The crop "guesstimate" and utilization prospects are scheduled for the first day with the all-important subjects of quality and consumer demand featured for second day discussions. Program for the third day is a four-state chartered bus tour of orchards in Pennsylvania, Maryland, Virginia and West Virginia.

MICHIGAN, *April 14*—Michigan has experienced its share of low temperatures during our recent rude winter. From reports, temperatures have varied considerably in the various sections of the fruit belt. Injury is reported to buds on peaches, sweet cherries, pears, apples, and cultivated blueberries. With the injury that has occurred to the wood in many of these fruit plants, any estimate of the 1948 crop will be pretty largely a guess until after fruit setting has taken place.—*H. D. Hootman, Sec'y, Mich. State Hort Soc., East Lansing.*

MINNESOTA, *April 20*—It is obvious that there is extensive winter damage to fruits in Minnesota although it is too early to evaluate the extent of the injury. Old time growers in the Lake Minnetonka region say it is one of the most damaging seasons to red raspberries on record, and there is much injury to strawberry plantings and to apple trees in that area. Plums and cherry-plums show less injury.

Conditions appear to be somewhat better in southeastern Minnesota (Houston County) where there is some damage to the more tender varieties of apples, such as Delicious, but in general the injury to apples is not severe. Tender varieties of red raspberries, such as Taylor, are badly damaged in southeastern Minnesota but strawberries and the hardier varieties of red raspberries in that area appear to be in fairly good condition.—*J. D. Winter, Sec'y, Minn. Fruit Growers Assoc., Mound.*

NEW HAMPSHIRE, *April 19*—At present the prospects are for a good bloom in most New Hampshire apple orchards, especially on McIntosh which is the leading variety. A good bloom, however, is not a guarantee that there will be a good set of fruit. Weather conditions the next month will determine this. Bud development on apples has reached the early delayed dormant stage in the early sections of the state. Mature scab spores are present in the old leaves in most localities and growers are prepared for the battle against this disease.

In spite of the low temperatures reported last winter, the peach orchards located on favorable sites (on ridges and upper slopes with good air drainage) have plenty of live buds for a good crop of peaches if no late spring frosts occur.

The New Hampshire Blueberry Assoc. held its annual meeting on March 12 at which time they voted to become affiliated with the New Hampshire Horticultural Society. The meeting was devoted to topics on freezing, marketing, and fertilizing blueberries. The following officers were elected: Charles Smith, Laconia, Pres.; Carrol Kimball, Farmington, Vice-Pres.; and Lyle Watson, Garish, Sec'y. —*E. J. Rasmussen, Ext. Hort., Durham.*

(*Continued on page* 30)

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BLACK LEAF 155 controls codling moth, leafhoppers, leaf-miners, aphids and grape berry moth, without destroying beneficial insects such as those that hold mites in check.

BLACK LEAF 155 is a non-caustic, non-volatile nicotine spray. It sticks through heavy rains, giving maximum protection. It is economical. Its use protects the vigor of the leaves and promotes quality fruit.

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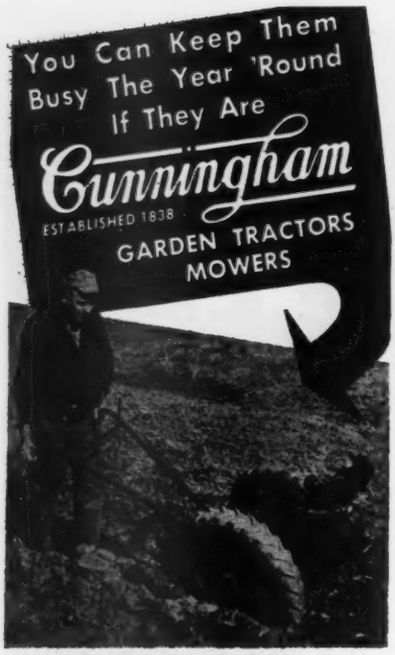

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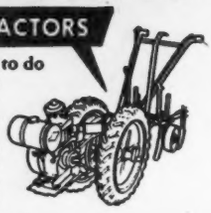

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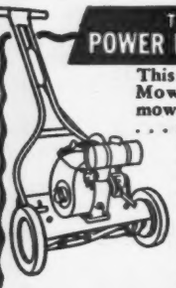

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DON'T FORGET THE INDUSTRIOUS HONEY BEE

By T. J. PAISLEY

"I NEED BEES for my orchard, but how can I get them?"

How many times have you heard that question—or asked it yourself? All fruit growers realize the importance of the honey bee to fruit production, yet they are often stumped by the question of obtaining bees. The solution of the problem depends, largely, upon the extent of the grower's operation—whether it be large or small.

First, let us consider supplying the large commercial fruit grower. He must do things on a grand scale, since the best working ratio of bees to the orchard is one hive per acre, and several hundred acres of trees will require a great deal of equipment for adequate blossom coverage.

Ownership of his own hives is not his best solution for several reasons. In the first place, purchase of equipment will entail a large capital investment, and the upshoot of the venture will be that the grower will find himself to be the owner of several hundred hives, and he would be plunged deeply into the honey business. Besides this, his bees would demand attention at a time when his fruit trees needed the most care.

The most effective answer for the commercial fruit grower is to rent hives. A large number of beekeepers are renting hives for pollination purposes at present, and the arrangement has proved satisfactory to both sides. Above all, the bees are available to the orchardist precisely when he needs them. They are moved into the orchard for the blossoming period and are then moved out again, so that danger of injuring the bees by spraying is eliminated.

Another advantage to renting bees is that professional beekeepers handle the insects and can assure the grower of bees at their peak strength when they are most needed. This is important, for to do an efficient job, a bee hive must have a strong field force of vigorous, healthy workers. Just any hive will not do.

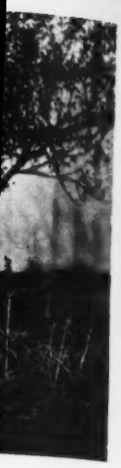
Bees are being rented now for $3.00 to $8.00 a hive, depending on the distance of the orchard from the beekeeper's home yards. To locate the most convenient bee rental service, the grower may contact his local County Beekeeper's Association for information.

The problem is not so easy for the non-commercial grower with only a small acreage of fruit trees, for it would be impossible for him to rent bees in such a small quantity. However, complete bee coverage of the blossoms is just as essential to him as it is to the large commercial grower, and his best bet is to go into the bee business on a small scale. It will eventually prove to be a profitable side line. The time element will not be so important to the small orchardist, and a few hives of bees will require only a minimum amount of attention.

Besides appreciating the economic value of owning his own equipment, the backyard fruit grower will find beekeeping to be a fascinating and enlightening hobby. To get off to a good start he may obtain abundant beekeeping literature from any bee equipment supply house such as the A. I. Root Company of Medina, Ohio.

In any event, the importance of bees in the orchard cannot be overlooked by the grower with one acre or a thousand acres. Pollination is the most essential natural process in the production of fruit, and it is best accomplished by the bees.

The wise grower should plan to have bees available to his orchard at blossom time.



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Thiophos 3422 TRADE MARK PARATHION

KILLS MITES, SPIDERS, APHIDS, OTHER PESTS

THIOPHOS 3422, the remarkable new basic ingredient for powerful insecticides is one of the most efficient pesticides ever offered fruit growers.

THIOPHOS 3422 kills mites which multiply when DDT is used and thus solves the serious mite problem.

ITS ACTION IS SUFFICIENTLY LONG-LASTING to effect incredibly high kills against many types of fruit pests. Yet the active ingredient is volatile leaving practically no residue at harvest.

ECONOMICAL—as inexpensive to apply as any other insecticide, because THIOPHOS 3422 is effective at remarkably small dosages. For example, only ½ lb. of 15% wettable powder makes 100 gallons of spray, for excellent control of European red mite or two-spotted mite on apples; 1 lb. of 15% wettable powder per 100 gallons will control pear psylla.

THIOPHOS 3422 mixes readily with wettable and dusting sulfurs, insoluble coppers, DDT, benzene hexachloride, rotenone, pyrethrum and lead arsenate.

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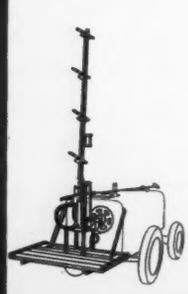
John Bean high pressure power sprayers, combined with the new 4, 7, and 8 gun automatic spray masts, bring spraying efficiency to a new peak. The John Bean masts are gun-equipped — have the drive to get into top centers. They are simple in design to reduce maintenance to a minimum. The tractor driver can operate all controls.

The *Speed Sprayer*, is everything the name implies. You cover extra acres every day, at lower cost, with less labor. Your John Bean dealer will welcome the opportunity to give you the facts and figures about *Speed Sprayer* efficiency and economy.



4-GUN SPRAY MAST

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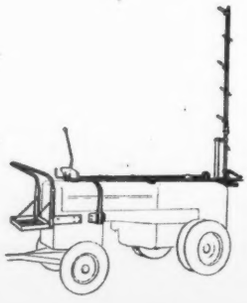

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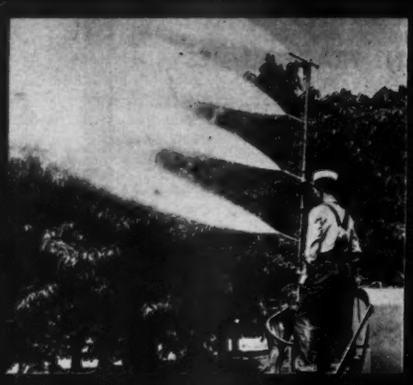

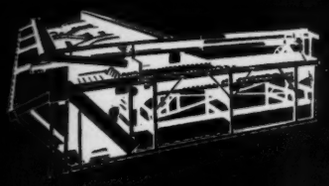

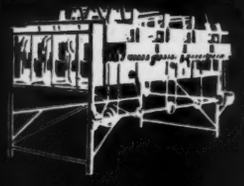

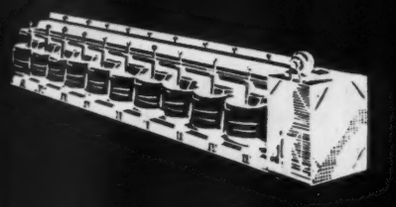

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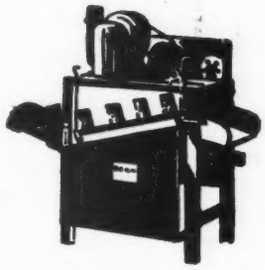

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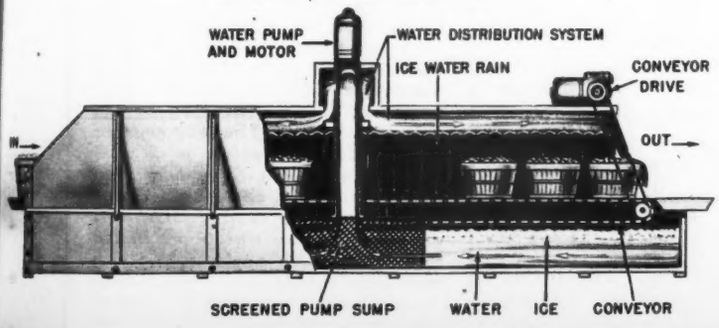

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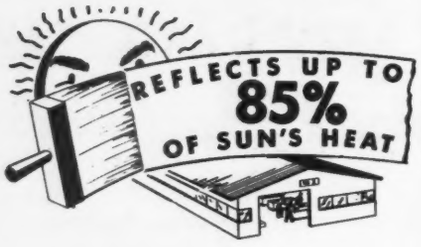

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POLLINATION

(*Continued from page* 13)

APPLES

With the present knowledge of cell structures, commercial varieties can be grouped in two classes: diploids and triploids. The diploids have 34 chromosomes in their body cells, while the triploids have an extra complement of 17, that is, 51 chromosomes. Generally speaking, the diploids produce pollen that germinates well, while the triploids do not. Practically all of the diploids, such as the McIntosh, Northern Spy, Delicious, Rome, Cortland, Macoun, Milton, Wealthy, Jonathan, Grimes, Golden Delicious, etc., are compatible to one another and will also pollinate the triploids satisfactorily. Even the self-fruitful kinds may be benefited by being near to a variety with compatible pollen, especially during certain adverse seasons. The main consideration of the grower is to select varieties which overlap in their time of bloom, come into bearing at approximately the same age, and which bloom every year. When triploid types, such as Gravenstein, King, and Rhode Island Greening, are planted, it is advisable to interplant at least three varieties, two of which are compatible diploids. Possibly a third type should be mentioned, such as the Winesap. Although a diploid with viable pollen, the Winesap's pollen is so clumped together that it makes an undesirable pollinator.

PEARS

Most of the commercial pears, as grown in New York, are self-unfruitful. The only combination known to be unsatisfactory is the Bartlett and Seckel. Unfortunately, some orchards have been planted with this combination, or with only one pear variety. In such cases some of the trees must be grafted over to another variety. The minimum amount of grafting recommended is every third tree in every third row. This arrangement provides a pollinator next to every tree.

Bouquets were once placed in a solid block of Kieffers that bloomed heavily, and the trees next to those with bouquets produced from two to three times as much fruit as the trees two and three rows distant. Obviously if the season for pollination had been prolonged and sufficiently warm for good insect flight, the differences might have been less marked. Again, in a year when the pear blooming season was very cold, the only set that occurred was where pollen was applied by hand. We have also had cold seasons when the pollen, even though applied, would not function.

PEACHES

Most of the commercial varieties are self-fruitful; thus only those with abortive pollen, such as the Mikado and J. H. Hale, need be provided with a pollinator.

APRICOTS

Apricots are usually said to be self-fruitful, but there are exceptions. For example, no fruit was obtained from three trees of the Riland after all surrounding seedling apricots were removed except when the blossoms were hand-pollinated. Reports of unfruitful seedlings are occasionally received.

CHERRIES

Sweet. All sweet varieties are self-unfruitful and certain combinations are incompatible. For instance, Napoleon (Royal Ann), Bing, Lambert, and Emperor Francis will not pollinate one another successfully although each variety produces good pollen and will pollinate other varieties satisfactorily. In England M. B. Crane and his co-workers at the John Innes Horticultural Institution have found a number of incompatible combinations.

Sour. The leading commercial varieties, Montmorency and English Morello, are self-fruitful. Even though self-fruitful, however, the

(*Continued on page* 28)

HANDY ANDY

When his orchard is muddy, Alonzo Swick of Wilson, New York does not have to sit back and wait for it to dry. He has invented a double-wheel arrangement for his tractor which begins to function as soon as the going gets rough. The lazy member of this duo-mechanism is a steel wheel which is a little smaller than the rubber wheel and which, therefore, only has to exert itself in soft ground. The two wheels are bolted together through angle irons which have been welded to the rims of each wheel. Swick has bent the spokes of the steel wheel inward so that it will fit just outside the rubber wheel.

Insects driving you out on a limb?

THIS YEAR—no matter what your practice has been in the past—you should include summer spray oils in your schedule. Why? Because infestations of red mite and red spider have actually *increased* since the introduction of DDT. These menaces to your crops and your profits are not destroyed by DDT. But their natural enemies *are*, which explains the recent build-up of red mite and red spider.

Summer spray oils control red mites and red spiders—effectively, safely. Furthermore, they promote healthier buds and foliage, give the fruit better finish and color, and protect against sting-blemish. They improve the yield in both quantity and in quality.

In addition to red mite and red spider, you control also the codling moth and leafhopper when you use . . .

Standard's Top Quality Summer Spray Oils

1. NICO-SOL SUMMER SPRAY OIL is a highly refined, white oil with an oil-soluble nicotine compound. The oil, alone, will kill a high percentage of the codling moth eggs when the tree is sprayed, and will continue to kill many new eggs after the spraying. The nicotine increases the effectiveness of this oil by killing codling moth worms and leafhopper nymphs.

2. SUPERLA SUMMER SPRAY OIL is a petroleum oil of high insecticidal power with added chemical agents which prevent its absorption into plant tissues. This oil is also a good spray for red mites and spiders. It will kill the eggs and also the highly resistant adult insect. This spray oil is one of the most effective and economical miticides known—a complete oil schedule keeps red spiders and mites down to a minimum.

3. NONPAREIL SUMMER SPRAY OIL WITH DDT is a clear, fully fluid oil combined with emulsifying agents and soluble DDT. The spreading action and weather resistance of this oil assure a uniform DDT deposite. By combining the egg-killing power of the oil with the deadly, worm-killing effects of DDT, this spray oil has proved to be especially effective for control of both the codling moth and the leafhopper.

Use these spray oils this summer . . . and you won't have to worry about insects driving you out on a limb. For complete information on the use of these spray oils contact your nearest Standard Oil Agent, or write

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Packed in 50-lb. bags, 6-lb. bags and handy 1-lb. shaker cans.

Alcoa Cryolite Insecticide

POLLINATION

(*Continued from page 26*)

pollen must be transferred from the anthers to the stigmas by insects. One of New York's large sour cherry growers puts bees into his orchards to insure a crop, particularly during the seasons unfavorable for insect flight.

Dukes. Supposedly derived from a cross between the sweet and sour cherries, these are often unproductive and may be benefited by being close to sweet and sour varieties.

PLUMS

European. The European varieties are both self-fruitful and self-unfruitful. Typical self-fruitful varieties are the Agen, Italian Prune, Stanley, Reine Claude, and Yellow Egg, while typical self-unfruitful varieties are Grand Duke, Imperial Epineuse, Hall, Albion, and Pearl. Although the self-fruitful types will set good crops, it may prove advantageous to have a good pollinator present during adverse seasons.

The Shropshire damson of New York, which is different from the English Shropshire, is also self-fruitful.

Japanese. A few of the Japanese varieties, such as Beauty and Santa Rosa, are partly self-fruitful and are probably benefited by the presence of other compatible Japanese varieties. Other varieties such as Abundance, Burbank, and Formosa, require cross-pollination. The yellow variety, Shiro, is considered one of the most reliable pollinators.

American. The American types are not grown commercially in New York. Since they are considered self-unfruitful, pollinators should be provided.

Japanese-American hybrids. The Japanese-American hybrids, such as Red Wing, Monitor, La Crescent, Superior, and Kahinta, are hardier than the pure Japanese and European varieties and therefore are grown where the European and Oriental types are winter-injured or killed to the ground. As these hybrids are not only self-unfruitful but also incompatible, it is necessary to interplant them with a compatible pollinator such as the Surprise, Kaga, or Toka.

QUINCES

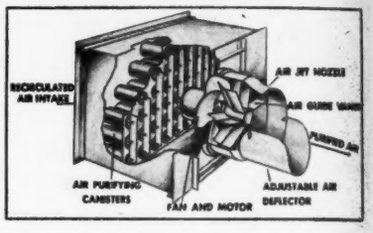
The main variety grown in New York is the Orange variety. Solid blocks of this variety produce satisfactory crops.

STORE APPLES FOUR TO SIX WEEKS LONGER

DOREX ACTIVATED CARBON APPLE STORAGE UNITS

- **Extend storage life**
- **Reduce scald**
- **Protect flavor**

Cornell University Agricultural Experiment Station tested Dorex activated carbon air purification equipment in the laboratory and in commercial apple storages for over three years. Results proved that fruit could be kept firm and flavorful four to six weeks longer. Dorex activated carbon units soak up the ethylene gas which quickens ripening, the gases which cause scald, and the "off" odors from packing materials and stored produce that impair taste and flavor. Another advantage is that Dorex units permit access to the storage space at all times for continual storing and removal of fruit:



***Dorex self-contained units** are designed to meet the requirements and specifications determined by the Cornell research. Portable and adjustable to storage conditions, they may be floor-mounted or suspended from wall or ceiling.*

LOW IN COST—EASY TO INSTALL

The average initial Dorex unit cost is 6¢ per bushel (based on storage capacity). Increased profits from a longer marketing season and better quality fruit in the first year alone can often exceed the original investment. Yearly maintenance is about ½¢ per bushel.

Dorex units are shipped complete, ready to install. There are no extra parts to buy, no expensive ducts to erect. Operation is entirely automatic and independent of refrigeration equipment. Little space is needed and practically no attention required. Capacities range up to 20,000 bushels, and units, either singly or in multiple, can be adapted to any size storage or layout.

For complete information, and the name of the dealer nearest you, write, giving your storage room capacities, to:

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AIR DIFFUSION · AIR PURIFICATION · AIR RECOVERY

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190 Murray Street, Montreal 3, P. Q.

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That is the reason why Oliver Tractors are so universally liked by farmers—and why farmers find in them, even in small things, so many practical features that only farmers would know and appreciate. To build a farmer's tractor—you've got to know farming.

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FOLLOW THE EXPERTS

DEMAND NEW DEPENDABLE CHAMPIONS FOR EVERY FARM ENGINE

Listen to the CHAMPION ROLL CALL . . . Harry Wismer's fast sportscast every Friday night, over the ABC network

STATE NEWS

(*Continued from page* 20)

NEW JERSEY, *April 16*—Fruit tree development in New Jersey was about one week to 10 days earlier than 1947. Peaches reached full bloom in the southern counties about April 12, and it is anticipated that apples will reach the same stage during the last week in April.

Some injury to peach buds occurred during January and on Easter Sunday night.

Apple bloom prospects are generally very good with a larger crop than last year in prospect if weather conditions are favorable during and after bloom. Weather conditions have been unfavorable for spraying operations during the last three weeks, a situation that may affect the amount of injury from apple scab, brown rot, and European Red Mite.—*A. J. Farley, Sec'y, N. J. State Hort. Soc., New Brunswick.*

SOUTH CAROLINA, *April 17*—Full bloom occurred in South Carolina this year on the average dates—Central South Carolina on March 12 and the heavily planted Piedmont on March 18 to 20.

Low temperatures on March 29 reduced the South Carolina peach crop fully 50 percent. Prior to that date it appeared that the South Carolina crop might be as much as 10,000 carloads with normal growing conditions. However, since low temperatures occurred on March 29, it appears that the crop will not exceed 5,000 cars.

The prospects for a high quality crop seem excellent at this time. Curculio emergence thus far has been very light, being only about 25 percent of the infestation that growers had to combat in 1947. However, it is possible that the emergence could be slow and would occur over a longer period.—*Roy J. Ferree, Ext. Hort., Clemson.*

TENNESSEE, *April 19*—The peach crop in the important southeast Tennessee area will probably be less than half of normal, due to a sharp freeze accompanied by snow the night after Easter. Crop prospects are nearly normal in middle and west Tennessee. In the Signal Mountain area, there appears to be a good set on Red Delicious apples, while other varieties will probably require some thinning. Apples throughout the state should have a large crop. Strawberry prospects are nearly normal, despite some freezing of earliest blooms.

The pear crop appears greatly reduced by freeze which caught blossoms at a tender stage. Sweet cherries and some grape vineyards along the southern border were seriously damaged at Easter, but not the sour cherries. The frequent rains have favored scab development on apples. Fire blight, which in 1947 was the worst in many years, has not appeared generally this season. Brown rot blossom blight has taken a toll of the most susceptible peach varieties which did not receive a pink bud spray in some orchards. The prospects for most of the bramble fruits are good. The pecans and most of the walnuts were not injured.—*J. C. McDaniel, Sec'y, Tenn. State Hort. Soc., Nashville.*

VERMONT—The self-sterile characteristic of McIntosh has been an important cause for low per acre yields of this variety in many Vermont orchards. Planting of pollinizing varieties has not been practiced with enthusiasm. Such varieties either do not produce apples meeting the market demands, or they create spraying,

(*Continued on page* 44)

HELP THE BEES

(*Continued from page* 16)

orchard.

A real mistake, which is made by too many fruit growers, is to postpone arranging for bee rental until just before the blooming period. This can result in a real loss to the grower because he must get bee colonies which are extra-strong and which have been carefully built up by the beekeeper. This building up takes time. If the colonies are not strong, the grower does not get as much pollinating value from them as he should.

To bear this out, it has been shown that colonies containing from 12 to 16 combs of brood and 6 to 8 pounds of adult bees may have from five to ten times as many bees flying per minute as there would be from weak colonies which contain two or three combs of brood and from 1 to 2 pounds of bees. This is particularly true when the weather is cool, cloudy, and windy. At low temperatures of 50° to 60° F., weak colonies may not fly at all; whereas, strong colonies will still maintain a flight rate of from 50 to 100 bees per minute at temperatures near 60° F. The flight of strong colonies at temperatures from 65° to 80° F. on fair, sunshiny, calm days may reach from 200 to 300 or more bees per minute, while at the same time the flight of bees from weak colonies under the same conditions may range from only 50 to 75 bees or less per minute.

This is of great significance to the fruit grower since there may be only a half-day of optimum pollination weather during the whole blooming period. A few extra-strong colonies in a fairly large acreage would accomplish more transfer of pollen during this half-day of fine weather than 50 or more weak colonies possibly could.

In the largest fruit growing districts of Michigan the problem of finding enough bees for pollination is handled through the County Agricultural Agents who, in turn, depend upon local key beekeepers to furnish the available bees within the districts. If additional bees must be brought in from a distance, the cooperation of the State Apiary Inspection Office, State Department of Agriculture, and the State Extension specialist on beekeeping is required to contact commercial beekeepers who are willing to rent their bees. The State Apiary Inspection Office assists in furnishing names of available commercial beekeepers and also sees to it that the foulbrood situation is in hand so that the disease may

(*Continued from page* 32)

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With their help he can put these ORTHO Organic Insecticides to work for you with precision and economy. He can guide you in their practical application.

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SOUTH HAVEN, MICHIGAN BOISE, IDAHO

HELP THE BEES

(*Continued from page* 31)

not be spread either to local bees or to the bees brought in. Unless this precaution is taken, some difficulty may arise. All of these arrangements should be completed well in advance of the date the bees are needed so that the beekeeper can boost his colonies by extra feeding—or with additional bees—to get them to the desired strength by blooming time.

The number of hives needed per acre for adequate pollination will depend upon the number of trees in bloom at a given time. Ordinarily one strong hive of bees an acre will pollinate the bloom adequately. The grower will know whether more bees are needed for varieties particularly difficult to set, such as Delicious. As previously mentioned, the strength of the colony is much more important than the number of colonies available.

The amount of bloom on the trees must also be considered, as well as the need for bouquets and cross-pollinators. Occasionally one hears complaints from fruit growers who have too heavy a set and who must employ extra labor for thinning, but more often the complaint is that there are too few bees and insufficient set.

The actual handling of the bees in the orchard requires the proper preparation of the hives by the beekeeper for moving. The hives should be properly and securely slotted, or stapled, in the home apiary, and should be securely screened so that unskilled labor can handle them without being stung.

All colonies should have a reserve food supply so that there will be no danger of starvation in case of adverse weather conditions during the blooming period. This means that extra-strong bee colonies will require two-story hives to comfortably house them, and if the weather is favorable for nectar secretion from fruit bloom, the beekeepers may need to add a third story while the bees are in the orchard.

Even an unskilled person can judge quickly whether or not a colony of bees is strong by noting the activity at the entrance and directly beneath the cover of the hive during the middle of the day when the temperature ranges from 65° to 80° F. Under such conditions, strong colonies will have many bees flying from the entrance, and the combs occupied by the brood will be completely covered with bees. For instance, the actual weighing of adult bees shows that for each frame of brood there will be from ½ to 1 pound of adult bees in the hive. Thus, for extra-strong colonies containing 12 or more combs of brood, there will be from ½ peck to 1 peck or more of adults. This would be almost enough bees to cover the combs in a standard hive body. Weak colonies will have only a pound or two of bees on the combs, or roughly a hatful, and the novice can quickly tell by peeking into the hive after a few gentle puffs of smoke whether there are a lot of bees in sight or just a few. If there seem to be only a few bees in the hive, the beekeeper should be called upon for an explanation because such colonies are of little value for pollination.

While it is desirable to distribute the bees through the orchard, better results may follow the grouping of colonies in sheltered and sunshiny spots instead of distributing them evenly at the rate of a hive per acre. It is important to place the bees along the roads through the orchard where the footing is sufficient to hold the truck. A southern exposure, fully protected from wind, may insure increased bee flight at temperatures in the low 60's when bees in exposed locations would scarcely fly at all.

If the orchard is generally windswept, it will be well to place groups of strong colonies on the windward

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For growers preferring a dry wettable sulphur. Readily wettable—disperses well without excess foaming. Particle Size—4 to 5 microns.

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Particle Size—4 to 5 microns, insuring good coverage.

Magnetic "Humidist"

A dusting Sulphur containing 92% Sulphur. May be applied during and after rain as a "sticker" insures adherence to foliage. For growers who find it necessary to dust in an emergency.

Also headquarters for concentrates and mixtures of DDT—BHC —Chlorinated Camphene.

Write for circulars

This year, rely on one source of uniform supply for your insecticide and fungicide needs. With so many new products being developed, it's to your advantage to rely on the products of a company that has been in the agricultural field since 1885. Stauffer Dusts and Sprays are formulated by men of long experience and in strict accordance with State and U.S.D.A. recommendations.

See your local Stauffer Dealer or write to our nearest office for complete information about the products in which you are interested.

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side because in windy spots the bee flight activity will be more localized and tends to be down wind. As a matter of fact, in wind-swept spots, it will be worthwhile to construct a cheap windbreak around the group of hives. A slotted board fence 6 or 8 feet tall or a woven wire fence with corn stalks leaned against it, or even a snow fence, will break the wind sufficiently to increase flight activity appreciably.

If packages of bees are to be installed in the orchard, it is extremely important that sheltered, wind-protected, warm locations be chosen for the hives because a wind-swept exposure complicates the installation of package bees by causing them to "drift". This means that by the end of the first windy day, most of the bees sometimes will have drifted to a few hives and the remaining hives will be so weak that they are worthless. Once this has happened it is not easy to redistribute them. In fact, after serious drifting, even the strong colonies are worse off than they were before, since the strange bees may kill their queens. If no wind-protected spots are available in the orchard, it would be much better to group the hives in nearby thickets or brush to take advantage of wind protection instead of distributing the bees one hive per acre in the wind-swept orchard.

From the foregoing discussion, it may be seen that several points must be stressed in order to get maximum pollination service from a hive of bees. Even before the blooming period, skilled manipulation of the hive is necessary to get the colony extra-strong, and the hives should be placed in the orchard in such a way as to take greatest advantage of the sun and wind protection. The bees must have ample food; yet they must have plenty of comb space to prevent swarming during the bloom period. This is because colonies preparing to swarm are loafing, no matter how strong they are, instead of flying at optimum rate to transfer pollen. Therefore, the co-operation of the skilled beekeeper is needed to provide the extra-strong colonies ready for optimum flight if weather permits, and the co-operation of the fruit grower is needed to pay an adequate rental price to cover the services rendered and to keep poison away from the pollen and nectar food supply of the bees.

Recently, meetings have been held jointly by the beekeepers and the fruit growers in order to bring about a better understanding of each other's problems. As a result, both groups have achieved a neighborly feeling of co-operation and good will.

YOUR FOOD SALES ...AND OURS

DURING the war, growers enjoyed ready, profitable markets for all they could grow. Now we may be approaching a period when food will be seeking a market, rather than the market seeking food.

Growers and distributors are in the food business together, and it is in our mutual interest to maintain sound markets for farm products for the future.

To do so, we must work together. Each of us can make a real contribution, and each of us has definite responsibilities.

What Can Distributors Do?

We of A&P and ACCO can and do take these effective steps to maintain consumer demand for your products:

1. Constantly promote produce through advertising and sales effort, intensifying these activities when especially heavy crops are on the market.
2. Handle food more and more efficiently to reduce waste and distribution costs, and insure a greater return to growers.
3. Work with agriculture to find new markets, and devise improved marketing methods.

What Distributors Can't Do

Growers recognize that there are definite limits to what distributors can do. We can't create consumer demand for inferior produce. Nor can we sell a product priced too high in relation to a competitive product. And since the retail food business is the most competitive in the nation, we can't pay more than our competitors do for the same grade product, for that would force us to charge customers more and we and our suppliers would lose their patronage.

What Can Growers Do?

The primary responsibility for doing this job obviously rests with growers. Good performance by distributors, therefore, is effective only if growers follow these practices:

1. Step up production and marketing efficiency, as individuals or through cooperating to keep costs down.
2. Provide consumers continually with the variety, grade and pack of food they want.
3. Keep unripe and poor off-grade products off the quality markets, for they lessen consumer acceptance.
4. Encourage the development of processing plants as supplementary outlets.

We know that no easy answer to our common problem is at hand, but we sincerely believe that if, working together, growers do their part of the job right and distributors do their part of the job right, we can help maintain sound, profitable markets for farm products.

Atlantic Commission Company
produce-buying affiliate of
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FRUIT MASTER

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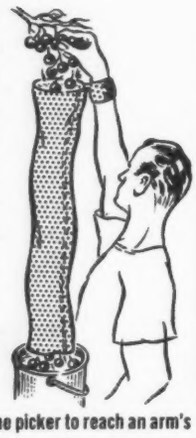

Here is a new method of picking fruit. It consists of a flexible durable cloth tube 5½ in. round and 36 in. long. It straps on the picker's wrist allowing him to drop the picked fruit immediately into the tube. The fruit rolls down the tube into the picker's pail or picking sack which is clipped to the tube. The 36 in. length of the tube allows the picker to reach an arm's length without pulling the tube out of the pail or sack. It can be used for picking all tree fruit and blueberries. Designed to prevent bruising.

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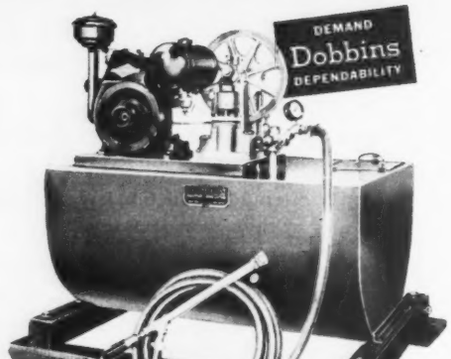

Dobbins high-pressure power sprayers are available on skids or wheels, with or without rubber tires. The model illustrated above can be easily placed in the back of a pick-up truck, wagon or trailer. It is ideal for orchard spraying or for greenhouse and nursery use as a stationary unit. Tank sizes available from 25 to 200 gallons . . . with pump discharge capacities ranging from 1½ to 6½ gallons per minute.

See these power models and Dobbins hand sprayers and dusters at your hardware or garden supply store.

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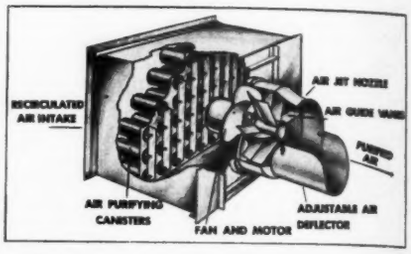
SMALL POWER MODELS FOR EVERY PURPOSE

NEW

Air Purification

It is easy to add from four to six weeks to the storage life of apples with the air purification unit made by the W. B. Connor Engr. Co. These units operate on the principle that activated carbon will absorb the gases given off by the fruit in storage. Each unit contains carbon-filled canisters, a fan, motor, air jet nozzle, and deflector which circulate the air and control its direction. This unit is not connected with the refrigeration machinery—it is completely independent.



New Juice Process

Fresh-flavored juice out of a can—that is what the consuming public will be drinking in the future. A new process has been discovered, and it will eliminate the artificial flavor of canned juices. The process: concentrating the juice, adding sugar to give it a self-preserving quality. The organization which will license this process—to fruit processor associations, co-operatives, and large producers—is the Commonwealth Engr. Co.

New Spray Rig

Air does it! Such is the principle of a new spray rig being distributed by the Robinson Fan Corp. The spray materials are vaporized, a low velocity air stream shoots them into the tree, and the air around the tree is displaced by the vapor. According to the manufacturer, this operation is safe, it assures complete coverage, and the cost is low. Two operators can cover 30 to 50 acres a day with this rig.

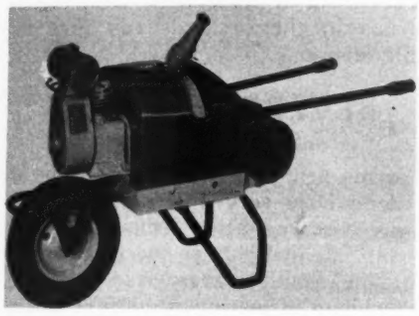
- AIR PURIFICATION
- SMALL TRACTOR
- MIST BLOWER

Small Tractor

Here is a small tractor that is revolutionary according to the manufacturer. The motor is in the back and the companion implements, such as plow, planter, and cultivator, are mounted on the front so that the operator can see what he is doing. Allis-Chalmers is making this tractor and has given it four forward speeds and an adjustment of the tractor wheel treads which will control the spacing of the rows.

Mist Blower

Weeds and pests on small acreages will meet a sure death when they come in contact with the new wheelbarrow mist blower manufactured by the Fitzhenry-Guptill Co. Called the "Guptill Whirlwind," this applicator uses concentrates of spray materials, and it has an attachment for spraying 2,4-D, or other such sprays, directly onto the plants. The operator can easily control the direction of the spray with controls that were built into the handles.



Compressor Model

The "new look" in "New Eclipse" compressors is being promised by the Frick Co. for Freon-12 service. This new piece of equipment has a speed of between 400-900 r.p.m., the capacity per horsepower is higher, and the crankcase has been shortened.

Booklets and Films

- Control of orchard pests by the use of Chlordane is described in a bulletin just released by Julius Hyman & Co. It is entitled "Control of Plum Curculio."

- "Material on the Move" is the title of a full color sound movie available from the Caterpillar Tractor Co. It shows the various applications of the tractor-scraper units on different kinds of farm land.

NEW ORGANICS plus LONG EXPERIENCE for COMPLETE PEST CONTROL

MUCH of the confidence in a physician comes from his long years of experience in a wide and diversified practice. New treatments are guided by a thorough background of knowledge.

So it is with the *new* Niagara Organic Insecticides for complete control of apple and peach pests. Better formulations and experience in proper blending assure you of maximum performance.

Here are four prescriptions for healthy fruit, larger packs and greater profits:

1. Rx NIAGARA NIATOX (DDT) CROP SPRAYS and DUSTS: for Apples and Peaches.
2. Rx NIAGARA BHC (benzene hexachloride) CROP SPRAYS and DUSTS: for Peaches.
3. Rx NIAGARA CHLORKIL (Chlordane) SPRAY and DUST FORMULATIONS: for use on Peaches and for Grasshopper control in orchards.
4. Rx NIAGARA HEXCIDE 200 (tetra ethyl pyrophosphate): for Aphis, Mites, Red Spiders and Curculio control.

FOR FAST—TIMELY—THOROUGH COVERAGE

There's nothing better than the
New Niagara CYCLONE LIQUI-DUSTER (it sticks the dust on)
and the
Niagara CYCLONE ORCHARD DUSTER

WHEN YOU BUY Niagara YOU BUY PROTECTION

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Will cool your fruit promptly, whether packed or not, and will give the dependable, low-cost storage that means the most, over the years. Air conditioning and bare-pipe systems, to suit your particular needs. Get details about refrigerated fruit storages lately built. Write, wire, phone or visit your nearest Frick Branch or Distributor; or, write
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SINCE 1847
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1847—Our One-Hundredth and First Year—1948
Your best assurance of lasting satisfaction.
Plant our hardy Northern grown fruit trees, inspected, true-to name, of finest quality, for guaranteed dependability.
Your requirements will receive our immediate attention.
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THE MONROE NURSERY MONROE, MICHIGAN

Advertisement

From where I sit ... *by* Joe Marsh

Where Does Your Money Go?

Read in the newspapers the other day where country folks and farmers spend more money, proportionately, on their homes than city dwellers do.

Doesn't seem hard to believe when you think it over. Take the folks in our town, for instance: They're mostly home-loving people—who'd rather spend an evening by the fire with a mellow glass of beer and a few friends and neighbors than go out in search of entertainment or diversion.

So it's only natural that they put more into what means most to them and to their children: their homes. They may not have too much to spend—but what they do have goes for those permanent, abiding comforts that make home a pleasanter place to be.

And from where I sit, that budget calls for some of the niceties of home life too—like cider and popcorn for the kids from time to time, and a friendly glass of beer for Mom and Dad . . . things that *belong* with what we mean when we say "Home."

Joe Marsh

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ARTIFICIAL POLLINATION

(*Continued from page* 15)

buzzed around instead of leaving for the field or returning to the hives. This confusion was reduced to a minimum with the wooden insert, but it lasted for two hours. Confusion continued for a longer time with the metal pan. Hives of bees where the inserts were not used were much more active than either of the hives containing them. The bees in these hives were 60 percent more active than those in the hive containing the metal pan, and 34 percent more active than in the hive with the wooden insert.

More than half of the bees left through the entrance of the hive with the metal pan instead of through the pollen exit opening. It was further noted that the major part of the pollen placed in the pans was fanned onto the hive bottom board and later picked up by the bees and apparently stored for food. Many of the bees going through the pollen compartment to leave the hive, crawled along the ceiling of the pollen insert and failed to come in contact with any pollen present. On examination of the bees leaving the hive, very little, if any, pollen could be detected.

An effort has been made to overcome these difficulties in designing and building a new pollen insert. It is to be hoped that the designer has been successful in doing this. Only actual trials in the orchards can give us the answer.

BEVERAGE APPLES

(*Continued from page* 17)

Farms, near Washington, D.C., and at Glenn Dale very little winter injury was observed after temperatures of —19° F. in 1942. In the 1908 report of the South Haven branch of the Michigan Experiment Station, some cider varieties obtained in 1890 were described and dismissed with the statement, "We have too many cider apples of the standard varieties to consider growing apples for that purpose." This was doubtless a wise verdict in 1908. However, in 1948, the astringent European cider varieties seem worth re-examination.

French Crab

It is quite possible that perfectly good potential cider varieties have for a long time been growing unheeded in our pastures and on abandoned farms. About the time of the landing on Plymouth Rock, English nurseries were using seedling stocks imported from Normandy, and many of these were undoubtedly sent to America in colonial times. American nurseries used them, or Norman seed, until a few years ago under the name "French crab." Thoreau's essay on the

Wild Apple (1862), which deals with pasture seedlings—definitely not with native crab—mentions the "acrid and puckery" flavor of some of those he found around Concord. The present writer found bitter apples growing in that region about 1905 and later in southern New Hampshire. Search among the venerable pasture seedlings, so common in some of the eastern states, might well reveal good beverage apples that have already demonstrated local adaptation. These would merit special consideration.

Asiatic Group

American usage of the term "crab apple" is more restrictive than the English, and practically all of the "crab apples" used for fruit in this country are descended from the Asiatic species *Malus baccata* and *Malus prunifolia*. Most of them are actually hybrids of one of these species with the domestic apple. The original species typically produce acid and astringent fruits of small size. In the course of selection for fruit through a period of more than a century in North America, the crab apples producing bitter or very acid apples have naturally been rejected. Consequently, when Caldwell reviewed this group in 1928 it offered little which approached the astringency of many of the European cider apples, though most were distinctly more astringent than our standard varieties. In recent years, however, particularly in Canada, some new crab apples with astringency equal to, or greater than, that of the European cider varieties, have appeared, notably some of the forms selected for their ornamental value.

These crab apples, as a group, are highly resistant to winter cold; they bear early, bear heavily, and bear often. They blossom early, or semi-early, and are more subject to injury from spring frosts than are the other kinds considered here. As a group, their weakest point is their susceptibility to fire blight. Another trait to be eliminated in selection for juice production is the tendency in many—not all—varieties for the fruit to cling tightly to the tree until it becomes overripe. At Glenn Dale, a few varieties have seemed somewhat susceptible to cedar-apple rust, but the Siberian race of crab apples as a whole appears to have high resistance to this disease. In some, the foliage may be unduly susceptible to scab.

Hybridization of European cider varieties with crab apples seems to offer distinct promise, particularly for northern orchards. It may be worth noting that Thomas Andrew Knight, who around 1790 made the first controlled crosses of apples, hybridized the "Siberian crab" with the domestic

(*Continued on page* 38)

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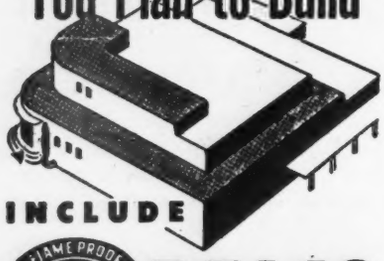

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BEVERAGE APPLES

(*Continued from page 37*)

apple to produce cider varieties. Studies made at the Long Ashton Station in England show that high astringency is a transmissible trait.

Native Crab Apple

Another group of potential usefulness in juice blending is the native crab apple, comprising in the eastern states *Malus coronaria* and *Malus angustifolia*, and in the prairie states *Malus ioensis*. Their fruits are generally so acid and so bitter as to be inedible in the fresh state, but Caldwell found that by cautiously adding the juice of the *angustifolia* to juice of Delicious, the palatability of the Delicious juice was greatly improved.

The fruits of the native crab, though larger than those of the primitive Asiatics, are small, usually ranging from 1 to 1½ inches in diameter. They mature late and keep long. Many, if not all, have a pronounced aroma which most people find pleasant. The trees are small and spiny and tend to bear when young. At Glenn Dale they seem practically immune to fire blight, greatly excelling the other groups in this respect, but they exceed the others in susceptibility to cedar-apple rust. Resistance to woolly aphis seems general in these natives. They blossom late and have escaped spring frosts much better than other apples, except a very few late-blooming European cider varieties.

Fortunately, at least some of the native crabs hybridize with the domestic apple, and Hansen's hybrids of the prairie crab reveal enough range in types of fruit to prove that the juice value of the native crab can be incorporated into hybrids. Some of these hybrids produce fruit that is larger than that of the native crab but apparently equally acid and bitter. Some observed at Glenn Dale have lost part of the frost-resistant qualities of the pure native but are, nevertheless, more resistant than most of the standard varieties and more resistant than their respective domestic apple parents. Some are even more resistant than the natives. The hybrids still show considerable susceptibility to cedar-apple rust but have suffered much less at Glenn Dale from this disease than the Siberian crabs and their hybrids have suffered from fire blight. They have suffered little from scab. The native crab probably lacks the resistance to extreme cold that is found in the Siberian crab and some of its hybrids. Its northerly natural range in Minnesota, however, extends to points where only a few of the domestic varieties can be grown, and beyond the safe range of our standard varieties.

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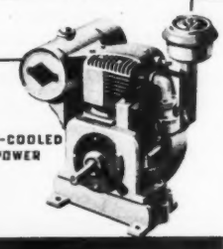

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NUT GROWERS NEWS

A Chestnut Rootstock Experiment

AT THE 1947 convention of the NNGA, as at most of its meetings, there was much discussion of the methods used in grafting and budding the named varieties of hardy nut trees. Many of the members who are not commercial propagators are interested in top-working their native or seedling walnut, hickory, pecan, and chestnut trees to varieties of superior merit for nut production. Scions of promising new varieties are exchanged among members, who test them for hardiness, growth, and productivity before they become available as nursery-grown trees. Several papers in the recently published 1947 NNGA Report should provide valuable information to other amateur nut tree propagators.

Chestnuts have given more problems in successful grafting or budding than most of the other nut tree genera grown in America. Dr. J. W. McKay, in "Results of a Chinese Chestnut Rootstock Experiment," reports the first of a series of tests designed to contribute needed information about stock-scion relationships in chestnuts. His work was carried on at the Plant Industry Station of the USDA at Beltsville, Md.

Dr. McKay used as parent trees in his experiment five seedling Chinese chestnuts that had been selected at Albany, Ga., because of their heavy-bearing tendency and because of the excellent keeping quality of the nuts. They originated from two lots of seed imported from neighboring localities in China and probably are closely related. Seeds from the five trees were planted in cold-frames at Beltsville and grown under uniform conditions. One hundred seedlings of each of the five parent trees were then budded.

"Buds from the five parent trees," said Dr. McKay, "were placed on the five lots of their own seedlings in all combinations of budwood and stock. The work was done during the first week of September when the bark of both budwood and stock was slipping; yet growth had slowed down to some extent. Buds were placed about two inches below soil level on the one-year-old seedlings, and the soil was pulled back to cover the buds. Budding was done by means of the familiar shield or T-bud method, and rubber budding

(*Continued on page* 40)

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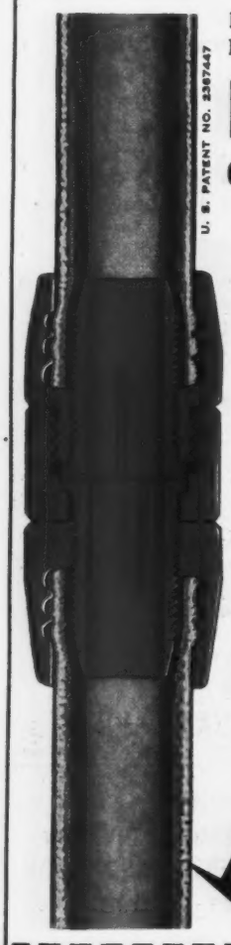

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NUT GROWERS NEWS

(*Continued from page* 39)

strips were used as a wrap. Budwood was shipped from Albany, Ga., to Beltsville, Md., and was damaged, somewhat, by high temperature in transit, a factor which may be partly responsible for the over-all low percentage of buds that grew."

In tabulating the number of buds that grew from each of the 25 combinations of stock and scion, Dr. McKay noted that considerable variation occurred in the performance of the five lots of seedlings as stock, as well as in the take of buds from the five parent trees. Thus, scion "e" failed completely on stocks "A" and "B", and so did scion "a" on stock "C". The total take on all stocks varied from 30 percent with scion "c" and 28 percent with scion "d" to only 8 percent with scion "e". Twenty-five percent of all scions on stock "C" grew, while only 8 percent grew on the poorest stock, which was lettered "D".

Size of nuts did not seem to be correlated with the take of buds, for Dr. McKay said that the scion "e" tree produced small nuts, whereas the scion "c" and "d" trees produced large nuts. Scions "a" and "b" are intermediate in take of buds, and the source trees both produced small nuts. If these results are correctly interpreted," concluded Dr. McKay, "it is clear that both the stock and the scion may influence the success or failure of propagation technique. Doubtless both of these variables have operated together in the propagation of existing varieties and, as would be expected, the results have been unpredictable. It seems likely that the grafting and budding of chestnut varieties should be worked out in the future on the basis of using understocks derived from the seed of special trees or clones found to be suitable sources by tests for grafting performance."—*J. C. McDaniel, Sec'y, Northern Nut Growers Assn., Inc., c/o Tenn. Dept. of Agriculture, Nashville 3, Tenn.*

HORTICULTURIST IN MICHIGAN DIES

DR. N. L. PARTRIDGE, associate horticulturist at Michigan State College, passed away at Fort Smith, Ark., April 7. Dr. Partridge, who is well-known for his work on soils and grapes, was on a short trip while convalescing from a lingering illness. Born in Chicago in 1890, he received his Ph.D. from the University of Illinois in 1917 and worked at the Delaware and Iowa stations before taking a position with Michigan State College in 1920.

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NATIONWIDE FRUITS

(Continued from page 19)

RASPBERRIES

• **Michigan growers** are urged to make new raspberry plantings on heavy soil in low areas. This advice is a contradiction of what was formerly advised for good raspberry plantings, but Stanley Johnston of the South Haven Experiment Station in Michigan says that the lighter soils are so lacking in fertility now that the yield of raspberries in that area is steadily declining.

Two disadvantages of these low areas might be dampness and frost susceptibility; the latter, however, will not prove disastrous because raspberries do not bloom until some time after the spring frosts have done their damage.

GRAPES

• **Where New York** vineyards were afflicted with grape berry moth last season, spraying should be started this year immediately after blossoming. At this time the caterpillars of the berry moth will be eating the stems and immature fruit, and the larvae will be making webs in the clusters.

Immediately after the grapes are set a wettable DDT powder in Bordeaux mixture should be applied and then when they are about the size of small peas, another application should be made.

These two early spray applications will be sufficient if the infestation has been light, according to Dr. E. F. Taschenberg of the Geneva Experiment Station; however, if the pest caused a lot of damage last year, two added sprayings should be made in late July and early August, one containing DDT and the last, fixed nicotne.

If the grape berry moth is allowed to develop during the early summer, it will be too late to gain control and prevent damage.

PEACHES

• **Peach growers** in Berrien County, Michigan, produce more peaches than any other county in the United States according to the 1945 Census of Agriculture. There are 2,332,605 peach trees of all ages in this area. The second largest producer is Spartanburg County in South Carolina which has 2,031,049 trees. Of the other leading counties, five are in California, and one each is in Colorado, Arkansas, and Georgia. These ten counties, with a total of 13,024,070 trees, produce 20 percent of the peaches grown in this country.

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FOR SALE CIDER PRESSES, NEW AND REBUILT. All sizes. Also apple sizers. Supplies all kinds. Immediate delivery. Write for Prices. W. G. RUNKLES MACHINERY COMPANY, 185-187 Oakland Street, Trenton, New Jersey.

HORSE TRAINING

"HOW TO BREAK AND TRAIN HORSES"—A BOOK every farmer and horseman should have. It is free, no obligation. Simply address BEERY SCHOOL OF HORSEMANSHIP, Dept. 1385, Pleasant Hill, Ohio.

MALE HELP WANTED

RELIABLE MAN WITH CAR WANTED TO CALL ON farmers. Wonderful opportunity now. $15-$20 in a day. No experience or capital required. Permanent. Write today. McNESS COMPANY, Dept. 68, Freeport, Illinois.

MISCELLANEOUS

TRE-TEX RABBIT VARNISH—APPLY WHEN TREES are set. Saves every tree. Agents wanted in 2000 counties. TRE-TEX powder perfect adhesive in ANY DUST APPLICATION—IT STICKS. Testimonials. Eighth year. ORCHARDVIEW, Noblesville, Indiana.

FACTORY REJECTS—GENUINE IMPORTED BRIAR smoking pipes regular $2.50-$10 retailers. Have surface flaws not affecting superb smoking qualities. Priced below cost of manufacture. 2 for $1.00. GAYLORDS, Dept. 130, Brockton 64, Mass.

PRINTING. REASONABLE, RELIABLE. SAMPLES 10c. HAROLD HAUS, Lancaster 7, Ohio.

MEN! LARGE SIZE SHOES, LARGE SIZE SOX! WE specialize in large sizes 10 to 16, widths AA-EEE. Oxfords, hitops, work shoes. Guaranteed extra quality. FREE Catalog. KINGSIZE, 567 Brockton, Mass.

NURSERY STOCK

2 YEAR LATHAM BEARING AGE RASPBERRY plants. 10—$2.50. 25—$5.00 Postpaid. C. H. BENEDICT, Grand Junction, Michigan.

HARDY GRAFTED NUT TREES. CRATH CARPAthian English Walnuts, Black Walnut, Butternut, Heartnut. Price list on request. BERNATH'S NURSERY, R. D. 1, Poughkeepsie, New York.

DEPENDABLE FRUIT AND NUT TREES, SMALL fruits, Ornamentals, and General Nursery Stock Combined catalogue and Planting Guide free. CUMBERLAND VALLEY NURSERIES, INC., McMinnville, Tenn.

100 GLADIOLUS GOOD MIXED, 1¼ INCHES AND UP $3.00. Postpaid and 200 bulblets free. O. C. FERREL, Rout 2, Clyde, Ohio.

STRAWBERRY PLANTS — BLAKEMORE, MISSIONary at 100 for $2.00; 500 for $5.00; Postpaid. 1000 for $8.00. Everbearing at $15.00 per 1000. Boysenberry thornless at 20c each. JOHN LIGHTFOOT, Birchwood, Tenn.

IMPROVED BLUEBERRIES—DELICIOUS U.S. GOVT Hybrids large as grapes. 2 Yr. plants 60 cents each. $6.00 per Doz. 3 Yr. Bearing age $1.20 each. $12.00 per Doz. All Prepaid. LATEST NEW INTRODUCTIONS NOW AVAILABLE. Pemberton, Atlantic, Dixi, Burlington, etc. 2 Yr. Plants $1.50 each. $16.00 per Doz. 3 Yr. $2.50 each. $26.00 Doz. GEO. C. MORSE, Williamson, New York.

RIDERS NEW VARIETY STRAWBERRY OFFER—50 True Strain Streamliner Everbearing, or 100 Giant New Robinson, or 75 Minnesota 1118 Arrowhead Junebearer $2.00 each, all for $5.00. Gem or Minnesota 1166 Everbearing—100—$2.25; 500—$10.00; Premier, Bellmar—100—$1.50; 500—$6.00; 1000—$11.00. Dunlap, Blakemore, Beaver—100—$1.00; 500—$4.50; 1000—$8.50. 10 Concord, Moores Early or Caco Grape $1.00, 25 Eldorado Blackberry, Cumberland or Latham Raspberry $2.25. 20 Mammoth Rhubarb or 50 Asparagus $1.00. 10 Thornless Boysenberry $1.00. 50 large blooming size mixed gladiolus —$1.00. Immediate shipment. Everything postpaid. Free Planting Guide Catalog. RIDER NURSERIES, Farmington, Iowa.

200 VARIETIES GRAPES, LATEST INTRODUCTIONS. French hybrids, etc. 3/16, ⅜" hose, 1000 ft. 57¢ lengths with couplings, $1.00 postpaid. SCHROEDER VINEYARD, Hutchinson, Kansas.

HIGHLY RECOMMENDED MINNESOTA APPLE, plum, pear, grapes, raspberry and strawberry varieties. Eleven apple trees low as $7.65. Catalog free. SWEDEBERG NURSERY, Growers, Battle Lake, Minnesota.

ORCHARDS FOR SALE

FRUIT FARM FOR SALE TO SETTLE ESTATE: U.S. highway 20, Westfield, New York. Apples, Pears, Peaches. Cold Storage for 12,000 bu. Write for details and list other farms. DEWEY CARLSON, Broker, Dunkirk, New York.

FOR SALE: IN FAMOUS WENATCHEE-OKANOGAN Fruit District. 45 acres, 30 acres high producing apple orchard. Produced 27,000 picked boxes in 1946. 31,000 in 1947. Varieties, Delicious, Red Delicious, Winesaps and Jonathan. Completely equipped with tractor, truck, stationary sprayer, etc., small new home, with tenant house and cabins for help. A sacrifice at $22,000.00 plus expenses of pruning, etc., after Feb. 1, 1948. Wire or write EASLEY AGENCY, Oroville, Washington.

FOR RENT: 80 ACRE APPLE ORCHARD—HOUSE, Packing House, Necessary equipment. MRS. J. P. PILGARD, Glastonbury, Conn. Tel. 2334.

FOR SALE—PROFITABLE ORANGE GROVE. ON account of health of owner will sell my productive grove in Orange County, Florida, of sixty acres, yielding approximately 20,000 boxes annually. Income yield 10% to 12% net average last 12 years. Price $1,000.00 per acre, which is 20% below market value. Terms to reliable party. ADDRESS AMERICAN FRUIT GROWER, BOX 72, 1370 Ontario St., Cleveland 13, Ohio.

YOUR CHOICE OF FOUR FRUIT FARMS FOR SALE by the owner: 255 acres, 3300 bearing apple trees in their prime, Spys, Delicious, McIntosh, Cortland. New five room house, two large storage buildings, six wells, electricity. 40 acres, buildings in excellent condition, 27 acres orchard, apples, pears, cherries, plums, peaches. 60 acres across road from above, house, barn, 340 bearing apples, 210 young apples, 100 pears, 1500 peaches, 200 prunes, 100 cherries, 20 acres timber, above two farms might be purchased together as a single large unit. 20 acres, 14 acres apples and cherries, all mature trees, best varieties, well, electricity, 5 acres timber. This located ½ mile from above two farms. These farms should be seen to be appreciated, all are being maintained in first class condition and are productive. Inquire, SELLNER AND SON, Route 1, Ludington, Michigan.

PATENTS

NATIONAL TRADE MARK COMPANY,: MUNSEY Building, Washington, D. C.

POULTRY

WHITE AFRICAN GUINEAS—CLOSING OUT SALE. Baby Guineas, Eggs, Stock. Catalogue free. GOSHEN POULTRY FARM, Goshen, Indiana.

PEAFOWL, PHEASANTS, BANTAMS, GUINEAS, Waterfowl. Thirty Varieties Pigeons, Stock, Eggs. JOHN HASS, Bettendorf, Iowa.

HELM'S PULLORUM PASSED CHICKS. HOLDER Three World Records. ROP Sired. Sexed. Immediate delivery. Free Brooding Bulletins. ILLINOIS HATCHERY, Metropolis, Illinois.

RAISE TURKEYS THE NEW WAY. WRITE FOR free information explaining how to make up to $3,000.00 in your own backyard. Address NATIONAL TURKEY INSTITUTE, Dept. 233, Columbus, Kansas.

TREE BANDS

YOU WILL SAVE MONEY AND SAVE YOUR APPLES if you continue to use chemically treated bands on your apple trees to control codling moth—satisfaction guaranteed. Write for prices and circulars to EDWIN H. HOUSE, Michigan Fruit Belt, Saugatuck, Michigan.

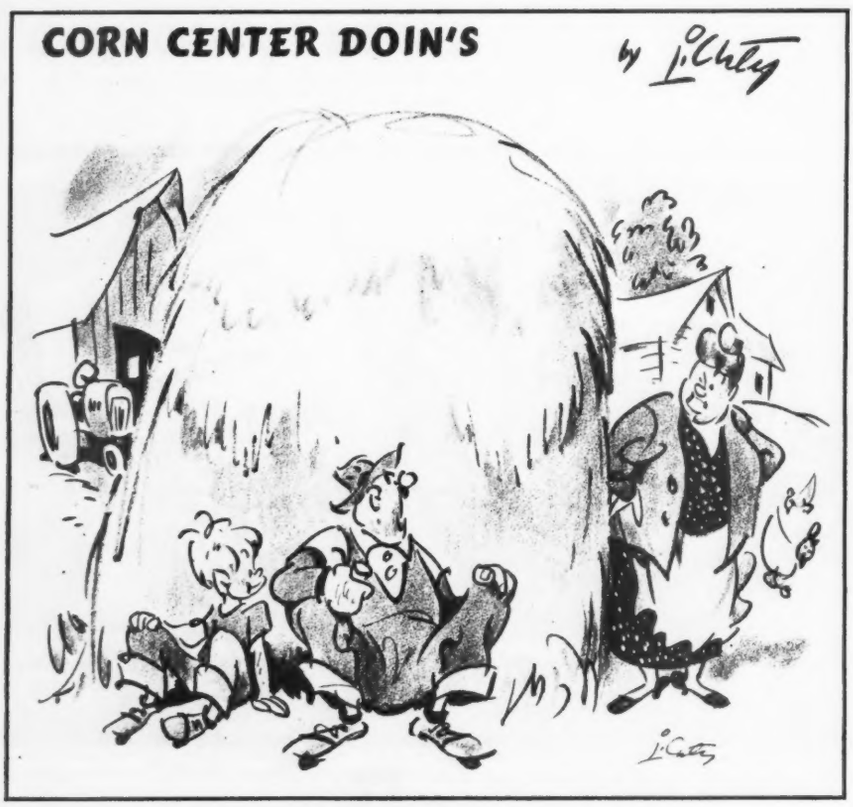
FOR BETA-NAPHTHOL TREATED APPLE TREE bands. Write M. A. KOELLER, Barry, Illinois.

VEGETABLE PLANTS FOR SALE

NANCY HALL, PORTO RICAN, SWEET POTATO Plants, Rutgers, Marglobe tomato plants. 200—85c; 500—$1.75; 1000—$3.00. Postpaid. VALLEYVIEW FARM, Hawesville, Kentucky.

QUALITY, OPEN FIELD GROWN, 8 INCH TOMATO Plants, Marglobe, Baltimore, Rutgers. $1.50—200; $2.50—500; $4.00—1000; $17.50—5000. COLONIAL PLANT FARM, Rochelle, Georgia.

SWEET POTATO PLANTS, GOLDEN YELLOW NANCY Halls, Pink Skin Porto Ricos, Good Plants, Full count. Quick shipment. D. & C. PLANT COMPANY, Gleason, Tennessee.



"Who's loafing? I gotta explain to the kid why farmers voted for the B. F. Goodrich kinda tire tread."

In a nation-wide poll among tractor owners, farmers voted 2 to 1 for the open-type tread —the B. F. Goodrich kind of tractor tread. Farmers like these tires because they give more traction—less slippage. The open tread with unconnected bars lets each bar bite deep into the soil. As the tire turns, the tread flexes. Loose soil and dirt drop out from between the bars and openings. Remember, slippage may rob you of 10% to 15% of your power without your even knowing it. For full traction, get B. F. Goodrich tractor tires.

An advertisement of The B. F. Goodrich Co., Akron, Ohio

OPPORTUNITY ADS

(Continued from page 42)

SWEET POTATO PLANTS, PORTO RICO, NANCY Hall. Grown in open sunshine. Strong, Vigorous, well rooted—carefully packed 200—$.90; 500—$1.45; 1000—$2.50; 5000—$11.75. GUINS PLANT FARM, Sharon, Tennessee.

SWEET POTATO PLANTS. NANCY HALLS—PORTO Ricos. Some of the best plants we have ever grown. Order today. We acknowledge every order. Send no money—pay when received. 300—$1.35; 500—$1.90; 1000—$3.00; 5000—$14.00. ROBINSON PLANT FARM, Sharon, Tennessee.

SWEET POTATO PLANTS. IMPROVED HEAVY PRODucing. Nancy Halls, Porto Ricans. Carefully packed, quick shipments. Guaranteed. Postpaid. 200—$1.00 500—$1.75; 1000—$3.00. PETE TAYLOR, Gleason, Tennessee.

SWEET POTATO PLANTS. GOLDEN YELLOW NANCY Halls, Pink Skinned Porto Ricans. 300, $1.00; 500, $1.50 1000, $2.50. WHOLESALE PLANT COMPANY, Gleason, Tennessee.

WANTED TO BUY

CIDER PRESS AND OTHER CIDER EQUIPMENT. HAROLD WAMPLER, BOX 536, Route 1, Dayton, Ohio.

Trampling Out the Vintage

By Joseph A. Cocannouer

A powerful story of farming on poor, overworked and eroded soil. The tragedy of creatures of habit and custom who refused to accept modern soil management and to their own ultimate destruction is the theme of this inspiring and interesting book. Joe Cocannouer, the author, is the Father of our present system of teaching vocational agriculture in our public schools. Many families which the author describes have their counterparts in every agricultural community. No one can read this book without becoming a better farmer and converting the bitter vintage of grapes into sound and mellow fruit.

Sent postpaid on receipt of $2.75

AMERICAN FRUIT GROWER

1370 Ontario Street, Cleveland 13, Ohio

HUNT'S GRAFTING WAXES, RODENT REPELLENT, ETC.

M. J. Beck Co., Box 7, Lansing 1, Mich.

T. B. West & Son

MAPLE-BEND NURSERY

FRUIT TREES — SMALL FRUIT PLANTS — ORNAMENTAL TREES AND SHRUBS

PERRY, OHIO.

•BLUEBERRY PLANTS•

WHOLESALE AND RETAIL

One, two, and three years. Certified. Early, midseason and late varieties, bargain prices.

GALLETTA BROS. - BLUEBERRY FARMS

HAMMONTON, NEW JERSEY

The CLINTON Gas Engine

FREE FOLDER

2 H.P.—$59.50 3 H.P.—$74.75

● Complete, compact, dependable, 4 cycle, single cylinder, air cooled gasoline engines—by world's largest 2 H.P. producer. For power tools, saws, farm machinery, pumps, boats, bikes, etc. A penny postcard brings full information. Im'dt. delivery. Write today!

CLINTON ENGINE CO.

16359 E. Jefferson, Detroit 30, Mich.

Kelly FRUIT TREES

for Spring Delivery

We are one of the largest growers of Fruit Trees and supply Quality True-to-Name Trees at fair prices. Send today for our 1948 catalog. Good fruit trees continue to be scarce. Order early to avoid disappointment. Satisfaction Guaranteed. Our 68th Year.

KELLY BROS. NURSERIES, INC.

155 Maple Street Dansville, N. Y.

NEW BULLETINS

Many publications of the state agricultural colleges and experiment stations contain information of interest to fruit growers from other states. Frequently these bulletins may be obtained by writing the Director of Publications of the college or experiment station concerned.

● **Growing Better Fruit in Colorado** (Bul. 396-A, 1947) Ext. Service, Colo. A & M Coll., Fort Collins, gives the basic principles of fruit production developed under Colorado soil and climate conditions.

● **Tree Fruit for Oklahoma** (Circ. 452) Ext. Service, Okla. A & M Coll., Stillwater, tells where to locate and how to plan an orchard in Oklahoma. It also describes the various fruit varieties and makes recommendations for cultural practices.

● **Strawberry Culture** (Ext. Circ. 279, 1946) Genl. Ext. Service, U. of N. H., Durham, is a brief but complete description of producing strawberries in New Hampshire.

● **Honeybee Losses as Related to Crop Dusting with Arsenicals** (Tech. Bul. 114, 1947) U. of Ari. Coll. of Agr., Tucson, gives factual information obtained from a study made to show the relationship between airplane application of the various types of commonly used arsenical dusts and honeybee losses.

● **Peach Orchard Soil Management Studies** (Bul. 330) Agr. Exp. Station, Utah State Agr. Coll., Logan, reports the results of a study made to determine the best types of soil for producing peaches in Utah.

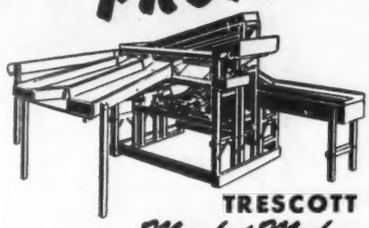
● **Growing Fruit for Family Use** (Circ. 435, 1947) U. of Mo. Coll. of Agr., Columbia, is for the farmer who grows fruit as a sideline and who wants to know what varieties will be the most productive with the least amount of time spent on them.

● **Pecan Growing in Florida** (Bul. 473, 1947) U. of Fla., Agr. Exp. Station, Gainesville, completely covers the various phases of pecan production in Florida from the selection of varieties to the marketing of the crop.

● **Some Fruits for Vermont Gardens** (Brieflet 625, Rev. 1946) Coll. of Agr., U. of Vt., Burlington, recommends various fruits for the home garden, tells how to plant them, and includes a spray calendar.

PEACHES

BRING GREATER PROFITS



TRESCOTT

Market Maker

NO. 104 PEACH MACHINE

Designed to speed sizing, grading and defuzzing of peaches and cleaning of pears for top market prices. Rugged and trouble-free. Bolted assemblies permit space-saving set-ups and flexibility for particular job at hand, big or small. Write for literature.

Apple and Potato Brushers, Graders

TRESCOTT COMPANY, INC.

MAIN OFFICE, FAIRPORT, NEW YORK

Spray easily—Spray thoroughly. Spray and drive your tractor—Save money with

HAMILTON SWIVEL GUNS

Write for literature

W. L. HAMILTON & CO.

Bangor, Mich.

Spray guns of all types—30 years' experience

Glider Model **FLAME GUN**

with 100 PRACTICAL USES!

KILL WEEDS, crab grass, Canada thistle,—stalks, seeds and roots. Destroy brush, caterpillar nests, diseased trees, grasshoppers, chinch bugs, etc. Clear irrigation ditches, split rocks, burn tree stumps.

Sterilize poultry houses, kennels, barns. Use as portable home forge. Melt ice, thaw pipes. Safe, inexpensive. Burns only 6% kerosene—94% air! Thousands of satisfied users. Write for FREE CATALOG.

7 MODELS from $22.50

HAUCK MFG. CO., 47 Tenth St., Brooklyn 15, N. Y.

Continental **ROLLER BEARING POST HOLE DIGGER** *WITH* **TRENCHING ATTACHMENT**

TRENCHING ATTACHMENT

Reduce costs, cut planting time with a Continental post hole digger! 9" to 14" auger digs holes up to 4' deep in hard or soft ground—saves back-breaking effort in planting young fruit stock and fencing orchards. The Continental is one-man operated, attaches easily to any tractor. Available with trenching attachment. See your dealer, or write

CONTINENTAL BELTON COMPANY

Belton 1, Texas

Chlordane-
Controls Plum Curculio — Assures Cleaner Fruit, — Greater Profits

Where plum curculio are a problem, Chlordane is the answer. It is deadly to these costly pests. Research entomologists report it gives the most exceptional control of any toxicant available.

Superior insect kill, however, is only one of Chlordane's advantages. Other benefits are:

1. No hazard of disflavoring fruit.
2. No hazard to trees, foliage, or soil.
3. Chlordane volatilizes, removing hazard of toxic residue by harvest date.
4. Adult curculio are killed before eggs are laid, hence no stings.
5. Chlordane is non-repellent—destroys rather than scatters insects.
6. Brown rot infection held to minimum by reduction of feeding punctures.
7. Chlordane is economical to use—compatible with weedicides, fungicides and other insecticides.
8. Scope of Chlordane effectiveness will cut cost of auxiliary applications.
9. Chlordane formulations mix readily and are pleasant to use.

For certainty of insect kill and safety to your crops, no other insecticide offers you so many advantages as Chlordane. Your local dealer can supply you with Chlordane-based insecticides—emulsions, dusts, and wettable powders—in the brand-named products of leading chemical companies. Early season treatment can pay big dividends in higher yields and better quality—so be prepared. Buy NOW.

Simultaneous Control OF MAJOR FRUIT PESTS

In addition to plum curculio, Chlordane kills:

"Cat-Facing" Insects	Cherry Fruit Fly
Ants	Apple Maggot
Japanese Beetle Larvae	Cherry Fruitworm
Grasshoppers	Strawberry Root Weevil

and many others

Intervals between Chlordane applications can be as short as four days without harming fruit or trees—as long as twenty days, still maintaining insecticidal effectiveness. Consult your local agricultural authority as to the schedule best suited to your local conditions.

For complete information, write for
Technical Supplement 208
"Direct Control of Plum Curculio"
Yours for the asking. Please address Dept. 22.

Julius HYMAN & Company
DENVER, COLORADO

WHEN BUYING INSECTICIDE, BE SURE THE LABEL STATES PLAINLY

'contains CHLORDANE'

THERE IS NO SUBSTITUTE

STATE NEWS

(*Continued from page* 30)

picking, and cultural inconveniences. In addition, they are not always dependable sources of pollen during some seasons. As a result, there are many solid blocks of McIntosh in Vermont, and much time and effort is spent in bringing in bouquets of other varieties at blossom time.

Aside from the use of pollen varieties, the use of tame or wild bees is essential during the bloom period.

A large number of Vermont orchardists are planning to overcome their McIntosh pollinizing problem by applying collected pollen, which is collected locally or purchased from the Pacific Northwest, through their spray rigs at blossom time. Pollen sprays applied through a Speed sprayer to a McIntosh block in the Southern Vermont Orchards, Bennington, Vermont, last year gave spectacular results. The trees were sprayed when the center blossoms were open. This resulted in a set of 70 percent center fruits, almost all of which were of fancy grade. A yield of 900 bushels per acre was obtained from a solid block of 26-year-old McIntosh trees.—*C. L. Calahan, Ext. Hort., Burlington.*

WASHINGTON, *April 20*—To date we have had no serious frost damage. Buds have looked fine all winter and cherries, peaches, and apricots are in fine bloom. Apples and pears are coming along in fine shape, which leads us to believe that prospects for a normal crop are good. We have been impressed with the fact that some trees, which in past years showed a tendency to bear biennially, are now showing a tendency to bear more regularly. Our explanation of this goes back to the orchard fertilization practiced during the war years. The trees seem to have built up reserves of nutrients which are now being used in fruit bud formation during heavy crop years. This situation, coupled with a tendency on the part of some growers to prune on the heavy side, naturally results in a good supply of fruit buds.—*John C. Snyder, Ext. Hort., Pullman.*

WISCONSIN, *April 13*—The apple crop situation looks serious in Wisconsin. Throughout the state's commercial areas, with the exception of Door County and Bayfield, there will probably be few if any Delicious and Jonathan, due to winter killing of the buds. Growers were advised not to spray with oil or dinitro dormant sprays because the weakened buds might be further injured.

Many growers are applying the ground spray for scab control using 600 gallons per acre of a one-half percent dinitro. Lime sulfur will be used until the bloom, but many growers will use a good wettable sulfur or Fermate after bloom.

A grower in the Bayfield area writes that the deer problem is so serious it is either the fruit grower or the deer. The animals have eaten back fruit trees to the second and third year wood and have dug up strawberry beds until they look like a hog wallow. The deer have become numerous in some areas and are destroying their natural pasture. Control of the deer population to balance the food supply is advocated by technical advisors to the Conservation Department, but resort owners and sportsmen do not seem to agree.—*H. J. Rahmlow, Sec'y, Wis. State Hort. Soc., Madison.*

UNION PACIFIC

The Governor of Utah *invites You*

STATE OF UTAH
OFFICE OF THE GOVERNOR
SALT LAKE CITY

HERBERT B. MAW
GOVERNOR

To American Industry:

The State of Utah takes pleasure in presenting to American Industry an opportunity for new development and expansions.

The State of Utah prides itself on the quality of its people, the tremendous extent and ready availability of its raw materials, its unlimited power resources, its unequaled transportation facilities, and its friendly attitude toward business.

These factors, together with the advantages of living under ideal home surroundings in the nation's most interesting area, has already induced many fine industries to locate in our State.

A new industrial economy is developing in our commonwealth based on the substantial foundations of the basic materials available and the happy and contented people constituting the human resources.

The establishment of your business in Utah will give you an opportunity to share in this new industrial economy and to participate in the growth already experienced in the west.

Sincerely yours,

Governor

Herbert B. Maw

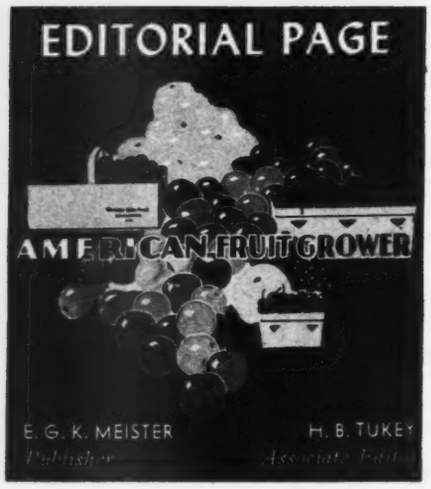
* One of a series of advertisements based on industrial opportunities in the states served by Union Pacific Railroad.

Unite with Union Pacific in selecting sites and seeking new markets in California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, Oregon, Utah, Washington, Wyoming.

*Address Industrial Department, Union Pacific Railroad
Omaha 2, Nebraska

UNION PACIFIC RAILROAD

Road of the Daily Streamliners



Don't Be Fooled! Know About Pollination

IN THE EARLY 1800's, as the story goes, Nicholas Longworth and others who were supplying the Cincinnati market with strawberries were amazed to discover that a newcomer produced 40 bushels of fruit where only one had grown before. It was not until sometime later that Longworth accidentally learned the secret. Popular varieties of the 1800's lacked pollen producing anthers; the successful newcomer had somehow learned that it was necessary to plant strawberries with anthers to pollinate the varieties without pollen. So difficult the problem had seemed; yet so simple was its solution.

Pollination will always be a mystery to those who have not learned the significance of the pistil or the anther, or who do not know the meaning of self-fruitful and self-sterile. And even to the informed observer, there is difference of opinion over the effectiveness of methods of artificial pollination such as pollen bombs, airplane applications and spray applications. To the commercial grower, orchard practices to facilitate pollination will increase yields; to the amateur grower, knowledge of pollination will also insure that self-sterile varieties are never planted without pollinators.

Florida Champs at the Bit

THE SPECTRE of surplus oranges and grapefruit does not frighten the Florida citrus grower as much as it annoys him. Already producing one-fourth of the world's oranges and one-half of the world's grapefruit, Floridans feel that, because of the natural advantages of their state, production could easily be doubled.

Plans to overcome production restrictions caused by declining prices follow three lines: 1) increased co-operative action, 2) more processing, and 3) lower costs.

To control and market in orderly fashion the crop which this year is estimated at 100 million boxes (160 million bushels), plans are underway for the formation of a great co-operative marketing association to be known as the Florida Citrus Mutual. The Mutual will control 75 percent of the crop, and it will promote a stable price structure by establishing minimum prices on all fruit sold in fresh or processed form.

It is hoped that rich juices and production-line techniques will make orange juice attractive to every American. Most prominent of the new products is frozen orange concentrate which even many Floridans cannot distinguish from fresh juice. Leading the way toward lower costs and wider sales is the Pasco canning plant at Dade City. Reported to be the largest plant of its kind in the country, the Pasco plant makes full use of production line methods—squeezing juice, canning, and packing for shipment in a matter of minutes.

Florida citrus growers are not content merely to maintain their present volume. Although inevitable pitfalls may slow them down and could cause insurmountable obstacles, odds are that Florida growers will provide strong, aggressive competition not only to California but to all manufacturers of juice from tomato and pineapple to apple and cherry, as well as to the gigantic soft drink and soda fountain beverage business.

In presenting a challenge to the fruit growing industry, Florida leads the way to greater production at a fair profit to the grower.

Fruit Production at a Glance

	1936-45	1946	1947
Apples bushels	112,896,000	119,410,000	112,503,000
Peaches bushels	62,936,000	86,643,000	82,981,000
Pears bushels	29,510,000	34,447,000	35,350,000
Grapes tons	2,578,920	3,119,500	3,093,800
Plums and Prunes tons (fresh)	707,660	791,000	672,300
Cherries tons	159,157	229,620	180,830

CITRUS

	1936-45	1946-47	Apr. 1, Est. 1947-48
Oranges boxes	83,488,000	113,980,000	109,960,000
Grapefruit boxes	44,593,000	59,640,000	60,860,000

A "Long-Time" Business

"A 'LONG-TIME' viewpoint is more important for fruit than for most other types of farming," says L. E. Slater, writing in the January number of *Farm Economics*. It requires a large fixed investment, and major changes cannot be made quickly. "Even small decisions may have an important effect on incomes over many years."

Although this is quickly said, it will bear a lot of solemn analysis. Take, for instance, those Stayman Winesap trees that are too far north to develop size, color, and good flavor; those McIntosh plantings that are so far south the variety becomes a fall apple; those Bing cherries planted where summer rain causes them to split almost every year; those Elberta peaches that come too late for a good market; or that frost pocket that blasts a promising bloom—all these demonstrate to every fruit man that "even small decisions may have an important effect on incomes over many years."

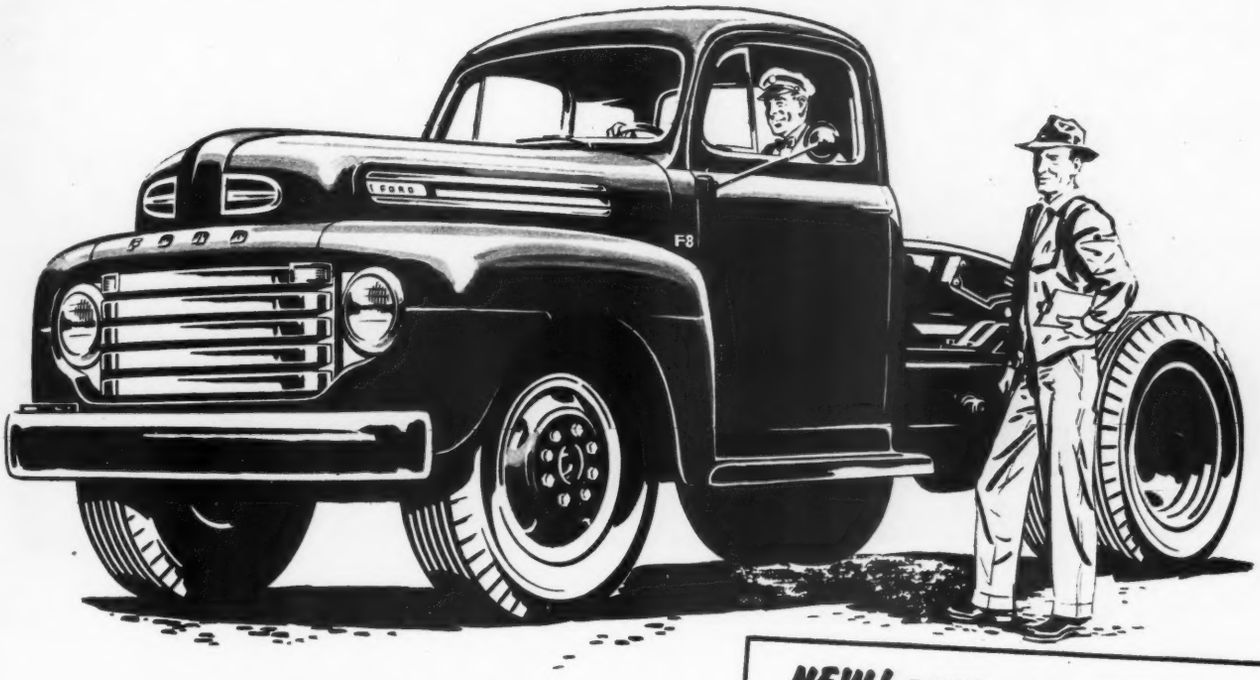
Everyone who would be successful in the fruit business must be a solid, conservative thinker with sufficient resources for a long pull. It is not possible to slip into and out of the orchard business the way one can move in and out of some lines of annual crops. Today's judgment may determine whether or not Sally goes to college 10 years from now.

The figures show that those who planted apple trees that came into bearing between 1931 and 1941 did not fare well unless they had sufficient capital to tide them over. The return per hour of labor during that period was 37 cents as compared with $1.16 in 1919 and 75 cents from 1920 to 1930. But the man who was able to survive the hard times of the thirties, found his return per hour of labor reaching $2.30 in 1946.

Now, says Mr. Slater, fruit prices are declining along with labor returns per hour. Wage rates, however, are still increasing; thus labor efficiency becomes of greatest importance. These are the times when high yields, good quality, and freedom from bruises pay off.

Certainly the orchard business is not for fast movement and for those with the gambling investment. It is not just chance that many of the most successful orchard enterprises are in the hands of the second, the third, and even the fourth generations of the same family. It takes solid, substantial folks to carry on through the lean periods until better times arrive—as they most assuredly always do.

NOW! THE MOST POWERFUL FORD TRUCKS EVER BUILT!



New Ford BIG JOBS! Box car size! Up to 48% higher weight ratings than previous biggest Ford Trucks!

New Ford *Bonus* Built* BIG JOBS rated for up to 37,000 lbs. Gross Train Weight and 21,500 lbs. Gross Vehicle Weight give you the "freshest" thinking in big-truck engineering.

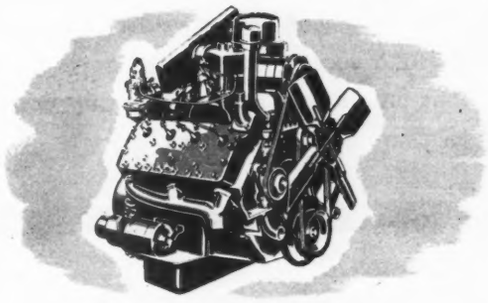
It's down-to-earth engineering, too, backed by over 30 years of truck building experience. The new BIG JOBS are as fit-for-the-job as the world's greatest truck know-how can make them. Ford truck know-how is unequalled because no other truck builder has built as many trucks.

Owing no allegiance to outdated big-truck design formulas, Ford Truck engineers designed an original creation offering a new 145 h.p. V-8 engine . . . up to 10.00-20 tires . . . up to 16-in. by 5-in. rear brakes . . . 5-speed transmission . . . and extra heavy duty construction throughout.

See the new Ford BIG JOBS which head a lineup of over 139 new *Bonus* Built* models. Visit your Ford Dealer today!

***BONUS: "Something given in addition to what is usual or strictly due."— Webster**

NEW! ROUGE 337 TRUCK V-8



145 HORSEPOWER
255 LBS.-FT. TORQUE

Most powerful engine ever offered in a Ford Truck! 337 cu. in. displacement. 4-ring aluminum alloy pistons with top ring porous-chrome-plated for better lubrication, long bore life. Hydraulic valve lifters to maintain zero-lash valve adjustment automatically. Exhaust valves faced with hard cobalt-chrome alloy. Dual throat concentric carburetor, correct metering at all operating angles and integral vacuum-type governor. New Loadomatic ignition.

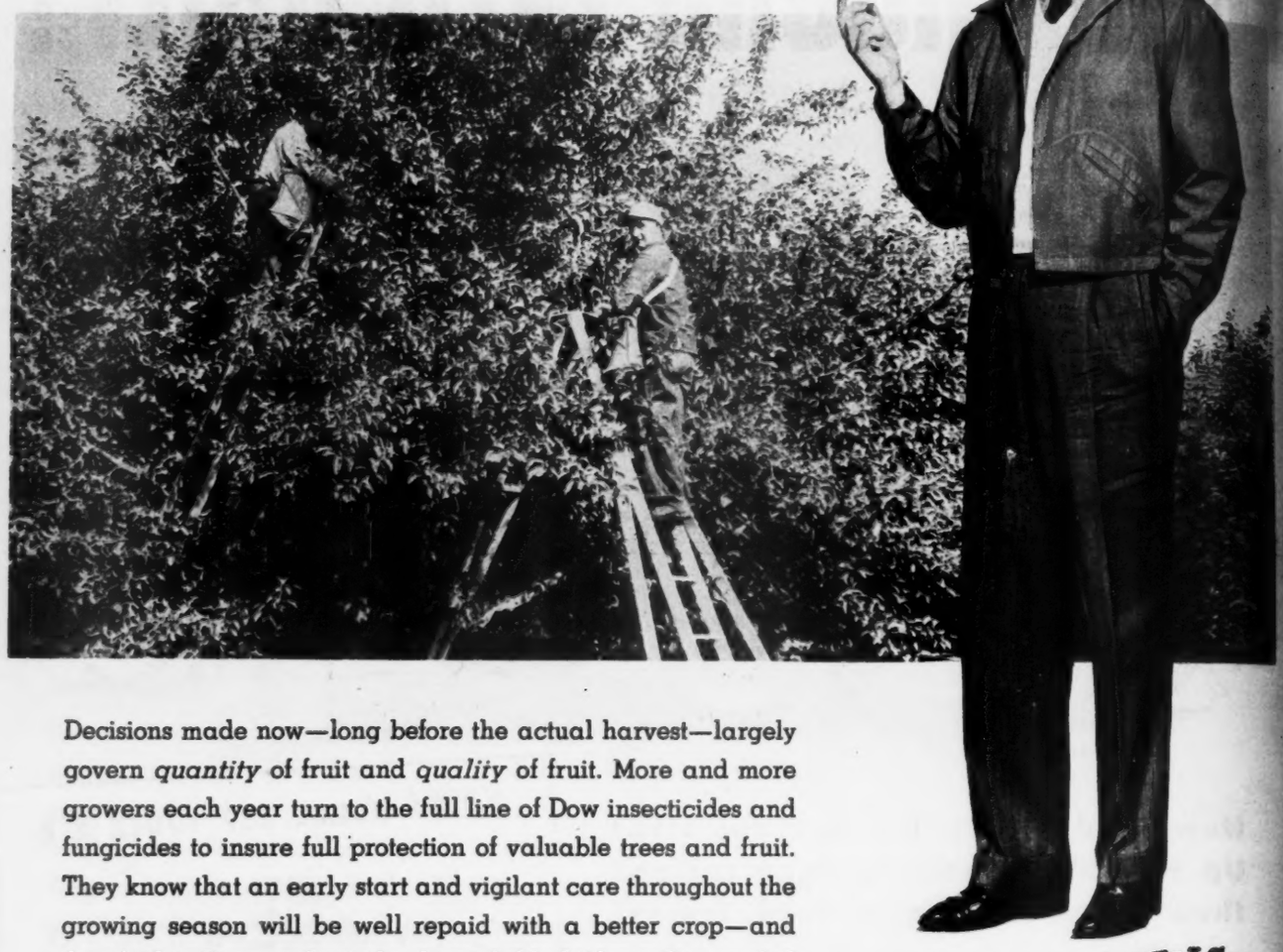
Listen to the Ford Theater, Sunday Afternoons, NBC network. See your newspaper for time and station.

FORD 1948 — *Bonus Built* — TRUCKS 1958

BUILT STRONGER TO LAST LONGER

LIFE INSURANCE EXPERTS PROVE AND CERTIFY...FORD TRUCKS LAST UP TO 19.6% LONGER!

"What will your harvest be?"



Decisions made now—long before the actual harvest—largely govern *quantity* of fruit and *quality* of fruit. More and more growers each year turn to the full line of Dow insecticides and fungicides to insure full protection of valuable trees and fruit. They know that an early start and vigilant care throughout the growing season will be well repaid with a better crop—and they find in Dow products the dependable high quality needed to insure complete control.

CLEAN FRUIT SELLS

Dow DDT-50%-Wettable is highly effective as an insecticide, since it possesses microscopic fineness and adheres properly to foliage and fruit. Its finely divided nature permits an even distribution of a long lasting residual film—essential for good insect control. Dow DDT-50%-Wettable has also proved especially valuable as a spray or dip for livestock and as a spray for barns and other farm buildings. For recommendations consult your State Experiment Station or local County Agricultural Agent, or write to Dow for further information.

And to control red mite, spray with DN-111—still tops against mites! If you prefer to dust, DN-Dust D-4 retains toxicity long enough to kill mites hatched 4 or 5 days after trees have been dusted.

DDT-50%-WETTABLE

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